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THE HISTORY OF THE DEVELOPMENT OF SURGERY FOR PEPTIC ULCER

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IT HAS repeatedly been said that there is nothing in the writings of Hippocrates which would lead to the conclusion that he was familiar with gastric ulcer as it is known today. Likewise, a translation of Galen's work makes no mention of peptic ulcer. However, both of these men described cases in which there was vomiting of blood associated with digestive disturbances and abdominal pain.

A graphic description of peptic ulcer apparently did not appear until the sixteenth century. At that time, Johann Bauhin wrote about the case of a woman eighteen years of age who had perforation of the stomach, with fluid and remnants of food in the peritoneal cavity. Later in the sixteenth century (1586), Marcellus Donatus reported finding a gastric ulcer at postmortem examination of a man sixty-nine years of age. Records of healed gastric ulcers were made in the sixteenth century by Forestus and von Graefenberg.

Matthew Baillie is credited with giving the first accurate description of the anatomic features of simple gastric ulcer in 1793. He also included clinical data in his report. Early in the eighteenth century Voigtel, Meikel, and Reil described peptic ulcer. Toward the end of that century, Hunter discussed perforations of the stomach. As Spallanzani had suggested previously, Hunter felt that the condition was caused by the eroding action of gastric juices. A few investigators subscribed to his views, but it was a long time before this conception gained favor generally. In 1800 Joseph Morin stated that perforation of the stomach was the result of a protracted local inflammatory process; he also mentioned auto-digestion as one of the causes.

The first report of gastric ulcer which had perforated apparently was made by Christopher Rawlinson in 1729. The discussions of the subject by Laine in 1819 and by Abercombie in 1824 are remarkable for their time. In the first half of the nineteenth century, Cruveilhier made the distinction between gastric ulcer, gastric cancer, and gastritis. Most of the writers of this time were especially interested in gastric perforation, although Cruveilhier detailed the development of chronicity, obstruction, hemorrhage, scarring, and contraction.

Hemmeter stated that, next to Cruveilhier, Rokitsansky had the greatest influence in forming the modern conception of gastric ulcer, and that the anatomic part of his description has served as a model for all subsequent writers on this subject. He attributes to these two men the beginning of the modern era in the history of gastric ulcer. Some years later (1855), Virchow suggested the hemorrhagic, necrotic origin of simple peptic ulcer. His thesis gained a large following.

To Schiff, in 1845, is attributed the recognition of the possibility that local hemorrhages in the stomach might result from irritation of certain parts of the brain. It is evident that, by 1852, Lebert recognized the vascular factor in the etiology of gastric ulcer. Muller and Pavy demonstrated that ligation of the arteries to various regions of the stomach caused large acute ulcers. By 1860 Ludwig Müller had prepared and published an extensive monograph on gastric ulcer.

It is known that gastric ulcer was recognized as early as 1600, and that perforated duodenal ulcer was reported in 1793 by Penado of Padua. However, it was not until the twentieth century

that a clear-cut distinction was established between these lesions. In the year 1906, Hemmeter made an attempt to visualize gastric ulcer by giving patients small amounts of barium in the hope that some flecks might adhere to the ulcer craters and thus be revealed by the roentgen rays. Although the etiology of the conditions undoubtedly is somewhat allied, they must be looked on as distinct entities. The fact that stands out as a dividing line is the extreme rarity of malignancy in the duodenum and the relative frequency with which malignant ulcerations are found in the stomach. With all the advancement that has been made it is often impossible to distinguish clinically between carcinomatous gastric ulcer and ulcerating carcinoma. As these two conditions were more definitely differentiated, changes in the methods of treatment took place.

Evidently, Hippocrates was none too optimistic about the future of gastric surgery, for he stated that accidental wounds of the stomach were deadly. Then, after the lapse of about 300 years, Galen commented that wounds of the stomach had been known to heal, although seldom. Early in the sixteenth century, Fallopius recommended suturing wounds of the stomach. Some of the methods used to secure closure of these wounds were novel. After approximating the edges, ants' heads were used as clips. When the ants closed their jaws, their bodies were cut off and the heads remained attached until the wounds were closed. The mandibles were aseptic by virtue of the formic acid normally present in them.

In all the centuries prior to 1800 surgery was not conceded a dignified place among the sciences. With but few exceptions, it was in the hands of quacks, charlatans, and barbers. Yet some of the feats these men accomplished are remarkable. In 1500 a sow-gelder is reputed to have successfully carried out cesarean section on his wife. The first accepted cesarean operation was performed in 1610 by Trautman of Wittenberg. About this time another sow-gelder carried out ovariectomy on his daughter. It was only after repeated efforts that a charter was obtained for the establishment of the Royal College of Surgeons. The general lay opinion of the day was aptly expressed by a well-known British statesman who is said to have admonished the House of Lords by saying: "There is no more

science in surgery than in butchering." This feeling is not surprising when one realizes the obstacles these men had to overcome, such as pain and sepsis, and their inability to control bleeding. The recognition of the healing of wounds by blood clot and the ligation of vessels were the outstanding accomplishments before 1800. The discovery of anesthesia and antiseptics enabled surgery to lay claim to recognition among the sciences. Dennis, in 1904, stated that "the four great discoveries, the circulation of the blood, the repair of wounds, anesthesia, and antiseptics, are the corner stones upon which a superstructure has been erected that has become a veritable temple of science, the dimensions of which eclipse in grandeur all other temples."

In 1810 Merren carried out the first experimental study of the possibilities of gastric surgery. He attempted pylorotomy, using dogs. Reference to statistics of operations on the stomach prior to 1875 indicates that the mortality rate in twenty-eight operations was 100 per cent. In the next ten years, considerable improvement took place, for the mortality rate was reduced to 82 per cent. In 1876, Gausenbauer and Winiwarter resumed Merren's work, and they carried out resection of the pylorus of dogs with moderate success. About this time, Billroth and his assistants entered the picture. Billroth prophesied that gastric resection would be the next step in the development of surgery of the stomach. Péan, in 1879, and Rydygier, in 1880, attempted pylorotomy in man. Reports in the literature indicate that both Billroth and Rydygier were successful in performing resection of the pylorus in man in 1881; the procedure, however, became known as the Billroth I operation. It is possible that Nicoladoni proposed gastro-enterostomy that same year, but it remained for Wölfler to employ the operation with a good palliative result in a case of advanced carcinoma of the pylorus, and he gave the operation its name. In 1883, Courvoisier devised a gastro-enterostomy to be carried out by a retrocolic approach. By 1884, Ransohoff of Cincinnati was performing gastro-enterostomy. In the same year, digital dilatation of the pyloric sphincter was proposed by Loretta, indicating that the influence of sphincteric action in the production of ulcer has been recognized for at least fifty years. The year 1885 found von Hacker performing posterior gastro-enterostomy and Bill-

roth discarding his first method of gastric resection in favor of the procedure now known as the Billroth II operation. A plastic procedure on the pylorus was carried out independently by Heineke, in 1886, and by Mikulicz, in 1887. At this time, Rydygier suggested that bleeding ulcer could be resected and pyloroplasty made, but there is no actual proof that he actually adopted this plan. In 1889 Mikulicz first attempted suture of a perforated ulcer. His patient died. Three years later the procedure was carried out by Kriege and his patient recovered. Partial gastrectomy was twice performed by Langenbeck in 1894. Schlatter successfully performed a complete gastrectomy in 1897. The operation is justified in a few instances, but the risk is too great and the ultimate results are too unsatisfactory to warrant employing it very often.

To Jaboulay, in 1892, is attributed the first suggestion of the possibilities of lateral gastroduodenostomy. Codivilla is credited with the performance of the first gastro-enterostomy for duodenal ulcer. He carried this out in 1893. During this period, Halsted was working on a modification of pyloroplasty, using lateral anastomosis. In 1898, Henle made clinical application of lateral gastroduodenostomy; he gave Mikulicz credit for the plan. Finney stated that his gastropyloro-duodenostomy, better known as the "Finney pyloroplasty," was an outgrowth of that work.

According to Mayo-Robson, there were 184 operations for gastric ulcer prior to 1900, not including the operations for perforation or hemorrhage, and the mortality rate was 16.4 per cent. Keen predicted that, as the technic improved, the mortality rate in the most difficult operations ought not to be greater than 10 per cent. This goal has long since been reached, for in 2,276 consecutive operations of all types, performed for gastric ulcer between 1906 and 1931, the operative mortality rate was 5.14 per cent.

The transition from primitive medicine to the surgery of our day is astounding. Many of the steps in our progress are directly traceable to suggestions gained from the study of the views expressed by our forebears, though in their time their ideas may have been thought to be untenable. Most of the operations originally were planned to remove a malignant process, or to relieve symptoms caused by neoplastic growths. However, even with the increased knowledge

of peptic ulcer, a number of these surgical procedures have been retained and, with slight modification, are in use today.

Up to the present there are no clinical or roentgenologic criteria that will determine whether there is an area of malignancy in the border of a chronic gastric ulcer; it is evident, therefore, that the lesion must be removed before one can proceed with certainty in carrying out treatment. For a number of years, surgical treatment has been recommended at the clinic to practically all patients with gastric ulcer, but it should be emphasized that when this is carried out it should be as conservative as is consistent with the extent and nature of the lesion.

Formerly, a large proportion of patients were treated by gastro-enterostomy alone, and it proved a suitable procedure in many instances because the disease had been allowed to progress to an advanced stage. But, with developments in surgical technic and the trend toward earlier opportunity to diagnose the condition, excision with knife or cautery and gastrojejunostomy justly gained in favor. Approximately 90 per cent of gastric ulcers are situated along the lesser curvature. Eighty per cent of these lesions are small, and many of them are probably best treated by this method. About 6 per cent of all patients will be found to have multiple ulcers necessitating partial gastric resection. If it is found that the ulcer has undergone malignant change, resection of the stomach is required, and the posterior Polya type of procedure usually is preferable.

During the past few years, there has been a tendency to be more radical in the treatment of both benign and malignant lesions of the stomach. If a malignant condition is present, or if there is good reason to suspect its presence, a radical operation is fully justified. But, if the surgical condition is an ulcer of the stomach or duodenum, the treatment should be conservative. A review of the results of several thousand operations performed over a period of years impresses one with the fact that the conservative procedures should be employed more often than they are at present. In a large group of cases of benign gastric ulcer, excision of the lesion and gastrojejunostomy gave very satisfactory relief. The incidence of jejunal ulcer fol-

lowing this operation for gastric ulcer is practically nil. In most instances, excision and local operation for duodenal ulcer has afforded complete relief.

The immediate mortality following conserv-

ative operations for ulcer of the stomach and of the duodenum is less than that of any other procedure, and the ultimate results are more satisfactory than those obtained after radical treatment.

THE MANAGEMENT OF ESSENTIAL HYPERTENSION*

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THE subject assigned to me is a formidable one. Some of its terrifying features are lessened by the limitation—"a discussion upon the *management* of essential hypertension." I infer that I need not attempt to summarize the confusing literature which has accumulated on the subject nor attempt to evaluate diagnostic technic. When a hypertensive state has back of it a known presumptive cause it is not essential. Unless otherwise specified, the term "hypertension" as I shall use it is the essential form. I shall refer at some length to what is still incompletely proven—"conditioned subjects"; and to multiple factors in contrast to unitary etiology. The cycle of the disease and its span shall receive more attention than some may deem either necessary or justified. This is because of its very great importance in prognosis and treatment. Hypertension (like a wife) is something, for the most part, to learn to live with amicably rather than to avoid or hold in contempt. A totally inadequate or unsatisfactory consort may be divorced; but an established hypertension is a permanent endowment, regardless of the degree or level to which therapy may force the blood pressure readings or to which they may spontaneously recede. A great confusion of terms exists; no one can dispose of this transitional incubus; it just gradually works itself out. Blood pressure elevations are not synonymous with hypertensive disease. The status may obtain with normal tension. The average hypertensive has a relatively long life expectancy. To hold the position of a wise medical adviser challenges our general fitness within the province of the guild

of healing. The sum total today of hypertensives among our patients mounts into very high brackets. Mortuary tables reflect this incidence, but the isolated factor of hypertension may be overestimated. Cardiovascular, cardiorenal, arteriosclerotic, coronary, anginal and diabetic episodes all override. The particular group of hypertensives which furnishes my thesis abounded long before the mensuration of either Riva Rocci or Janeway began, in the last decade of the last century. Blood pressure readings have not been overdone, but their interpretation has called for a wider knowledge and a broader philosophical comprehension than many have brought to it. I shall aim to avoid the manner of the medical propagandist portraying vital statistics to urge prevention. Rather is it my desire to catalogue some working formulae based upon observing the spontaneous courses of not a few hypertensive patients and to outline my impressions gleaned from the mass of opinion, chronicled in current magazines and almost routinely featured at our medical clinics and programs.

Hereditary Background†

Doctors have long held that the individuals ultimately proving to be hypertensive have their forebears to thank for their constitutional trends. It is generally agreed also that the physiological perversion yielding increased resistance in the precapillary arterioles precedes for years or decades the organic pathological imprints so much portrayed in the medical literature of the last

*C. C. Little, managing director of the American Society for Control of Cancer, doubts, on grounds of exact experimentation, such deductions. The clinician can only plead the plight of the brave Holland lad with his hand plugging the dyke, or the hunter holding the bear's tail while his partner explored the den in search of the cubs!

*From the Department of Medicine, The Duluth Clinic, Duluth, Minnesota. Read before the Southern Minnesota Medical Society, Mankato, Minnesota, August 13, 1934.

three decades. Recently, Brown, Craig and Adson[†] of the Mayo Clinic have reported studies and operative procedures which lend strong support to this conviction. Through the use of the method of ice water immersion of a hand, after a series of blood pressure readings at rest, Brown asserts that certain "conditioned" folks may well be segregated even before their puberty. Within this group, he states, this vasomotor stimulus (one of several may be used), acting upon an oversensitive center in the diencephalon, induces an exceptional and overactive blood pressure response. These hyperirritable reactors furnish the conditioned individuals (often with demonstrable hereditary backgrounds) who may, as the years go by, translate their physiological vasomotor irritability, first into fixed periodic sustained hypertensive episodes, and in time leading to the permanent anatomical imprints masquerading as hypertensive disease. Brown's critics are likely to maintain that his contention remains an unprovable hypothesis, with the temporal limitations of any observer plus the doubtful records or evidences available to him from previous records or mortuary reports. Nevertheless, it fits in very well with accepted clinical experience and has in a limited number of severe type cases (where Adson did bilateral supralumbar anterior nerve root sections) yielded striking clinical results. I shall return to this later in discussing the limited group where a high degree of arteriolar spasm exists, as evidenced in the eyegrounds, with fluctuating pressures accompanying (as a rule) kidney failure and uremic poisoning. In a broader sense (if the report of Brown and Adson finds confirmation) it should lead to clearer clinical reasoning and saner directional dietetic and therapeutic practices. The prayerful hope might be expressed that this type of study would put a quietus on the rather futile quest for a "specific cause"—a search, probably, as Quixotic as Ponce de Leon's effort to find the "Fountain of Youth."

The term "conditioned" is confusing without graphic illustrations. Hence, I go to the field of hematology to borrow a very gratifying and recent scientific development. Certain anemias are well on the way to control, both as to an etiological understanding and workable therapy.

Our own countrymen (Castle, Murphy, Minot, Morris and others) have brought to science and the world not only clarity in this greatly involved field but indirectly in our general appreciation of physiological perversions and the necessary limitations of what we have long held to be "organ" diseases and entities. The macrocytic anemias (at least four such) may be grouped and based upon gastrointestinal inadequacies resulting in a lack of erythropoietic maturation stimuli that totally upsets certain bone marrow sequences. Malignant granulopenia, on the other hand, is seen to be a primary bone marrow activity suspension, where the victim usually dies a bacterial death because his bone marrow is "conditioned" to certain "anaphylactoid" reactions. These may be a variety of substances temporarily or permanently inhibiting the building of the only leukocytes capable of restraining coccal infection. This terminal bacteriological death must not cause us to overlook the physiological break which prepared the soil. This point of view needs much emphasis because we have too long been "conditioned" (going back to the psychological use of the term) to what we may call "two-dimensional disease"—an etiological entity fully potent in itself—an available host.

In the illustrations above recited I wish to draw attention, as well, to the complementary interaction of the gastrointestinal tract on the one hand and the bone marrow on the other. The epochal development leads us not so much to the overthrowing of Virchow* as to a acceptance of Hippocrates. It is returning us to an appreciation of the question of soil and constitution—a pointing out, especially in chronic nutritional and neurogenic states, of the importance of factors other than specific causation.

Close attention to the physiological breaks which divulge these factors glimpses for us certain therapeutic advances in conditions long baffling and presenting an adamant front when approached from the angle of bacterial causation or their resultant immunological defense. I have already sketched the example of the anemias, and substitution therapy in myxedema and diabetes comes to mind. One might also mention the efficient preventive therapy in a state as

[†]Brown, G. E., Craig, Winchell McK., and Adson, A. W.: Effect of Sympathectomy on Severe Forms of Essential Hypertension. Read before the Minnesota State Medical Association meeting in Duluth, July 16, 1934. Published in MINNESOTA MEDICINE, March 1935, page 134.

*Virchow made clear the way for accepting the specific bacteriological etiology as introduced by the great Pasteur. As one great triumph followed another it seemed, of course, that dual-phase etiology (an invader and a host) represented the ultimate in all disease processes. Having found a cause, an immunity producing method must follow. Such a concept has led to untold waste of energy in modern research.

annoying and hereditarily conditioned as migraine.[†] It is not a forlorn hope that pharmaceutical research, plus some subtle leading out of the Occidental spirit into a better utilization of our instinctive faculties, may lead to the relief of needless arteriolar spasm among our people, and bring us that freedom from hypertension said to obtain in the crowded and circumscribed living of the Orient. We may even hope that this may be accomplished without imposing upon our people the individual squalor and caste limitations that years of economic pressure and intellectual futility have visited upon the Orient. In the meantime, I plead that we may cultivate the broadest understanding of the hypertensive's problems, with the greatest emphasis upon the ability to sense our patient's yearly needs as one setup in his development follows another, comparable with the diurnal or weekly changes of a pneumonia or typhoid victim. It is readily grasped that any disease which extends its course over an indefinite period calls for more management than treatment; and it has often been said, that "only the complications of hypertension call for treatment."

The Patient Is Introduced to His Disease

This usually happens in the course of a health, an insurance or a general examination. It is unusual to know just how long the process or tendency has been present; we may estimate in a limited (malignant?) group approximately how long they will live. Unless we grasp something of the "fourth dimensional phase or features of etiology" our contact with hypertensives may be less that of a wise counsellor than of a futile fanatic attempting to steer our patients away from our own pet aversions, or to the espousal of ways of living quite unbearable either for strength of body or peace of mind. We should strive to make a sensible and accurate diagnosis, having in mind a full and sufficient survey leading to a judicious estimate of the patient's trend and organic adequacy. Thereafter, only minimal blood pressure readings should be taken and minor variations should be ignored. Let us think

of blood pressure taking as we do of pulse and temperature estimates; or metabolic rates and blood sugar levels. These devisements do not betoken diseases, catalogued or charted by dots or numbers; obviously they become curves connecting a sequence of such dots. This Einsteinian thread intrudes itself and cannot be denied. Confusion presents itself constantly, likewise, in the matter of terms or designations. It may be worthwhile to interpolate what has been said many times before. Hypertension hastens wear and tear on the cardiovascular system and as an overwork phenomenon does increase the tendency to arteriosclerosis of the larger vessels; but this is the only connection between the two terms. Patients still treasure the terms "hardening of the arteries" and "enlargement of the heart." While hypertensive disease[‡] may and does shorten some lives there is a good side to the picture, and the ledger, which deserves emphasis; and the terms we use in interpreting conditions may lose much of their menace by a softening that is well within scientific fact as well as sympathetic consideration.

Irving Fisher, some twenty years ago (in another connection entirely) said, "There is a breadth of life as well as length"; and to elucidate added, "There is no area in a straight line." Despite all the lamentable comments of life insurance actuaries and life extension institutes, far more than the average of essential hypertensives live a broad, productive, sthenic life. Not all fat people are happy nor lean ones dour. Recent studies show vasomotor instability among the lethargic and sluggish, but we lose perspective unless we hold to the mean and we must not allow weight of so-called authority or accumulation of information to divert us from what our years of contact and experience show. While the average person's life is shortened by what we call essential hypertension, I hold that the area of accomplishment of life is actually broadened.

We must further interpose that women, especially after fifty, deserve a special category in this discussion. Perhaps it is on account of their emotional and endocrine lability; possibly their "biological superiority"; a few might intimate their inherited ability to accept what fate assigns

[†]Hypertensive disease and migraine permit of rather interesting comparison. Weighing the constitutional and personality background predominantly seen where these conditions obtain, the sthenic hypertensive knows few restraints until late complications impose them; the migrainer suffers tormenting abridgements early in life but fits most gracefully into the fifth and sixth decades with a comforting sense of gratitude for relief, a spirit chastened but a body spared by an enforced caution in living.

[‡]The best current literature distinguishes clearly between arteriosclerotic and hypertensive cardiovascular disease. The position of the kidney in these two entities has led to confusion and overemphasis upon the nephritides.

to them. They bear up under true essential hypertension much better than men. Whether the endocrine menopausal type so well discussed by David Riesman proves ultimately to be separate and distinct from the conditioned folk of both sexes who from the earliest ages respond to specific tests of vasomotor irritability remains still to be proven. We know empirically that menopausal women with flushings and nervous perturbation have very often fared well as they ride over their endocrine break and in so doing add considerably to the reputation of certain therapy that happened along at the time. An endocrine factor is encountered in hyperthyroidism and a mechanical situation arises akin to that in aortic insufficiency, but that rarely confuses careful clinicians. More especial comment must be given to those episodes of hypertension concerned with the toxemias (with or without kidney damage) of pregnancy; and eclampsia happens to furnish an acute physiological break that is more than casually interesting and bears upon our management problem. To this I shall refer later.

What the Patient Thinks About

Too much has been recounted in popular literature about the will or the determination either to prolong or terminate life. For any acute illness, medical or surgical, where the process yields death or survival in quite immediate fashion, no great advantage is gained by attempting to secure more than passive acceptance of the doctor's efforts and the results soon speak for themselves. However, hypertension is one of many fields where it is indeed wise to sound the mental processes and conjurations of the patient himself. We know that he is greatly more interested in the prognosis than in any of the details of the diagnosis. Every new recruit to the army of hypertensives is most interested in how or when he is likely to die. Like the obviously indigent Celt who offered a sum running into four figures if he should know the place where he would die, asked why he was so anxious to have this enlightenment, he responded, "Begorry, I'd never go near the place!"

Some Statistical Data Concerning Hypertensive Disease and Autopsy Findings

Medicine in general, and Minnesota medicine in particular, has profited greatly by the careful

observations and teachings in terms of the large autopsy material at our university under the direction of Professor E. T. Bell. A relatively large autopsy service in our Duluth institutions year by year adds support to Bell's statistics. From 60 to 75 per cent of essential hypertensive patients die a cardiac death; 12 to 15 per cent a cerebral accident sequence; 5 to 7 per cent die with renal insufficiency, and the rest die of miscellaneous events, not excluding the efforts of the automobile and the surgeon. However, these figures are not more than three-dimensional and lack the Einsteinian touch of time, since a great many would die a cardio-renal-encephalomalacic death if something else did not deny them that privilege by an earlier demise from tuberculosis, pneumonia, cancer and all other ills. Let us analyze these three divisions, first taking up the cerebral accident group, then the kidney, and finally the myocardiacs.

Patients and doctors both go wrong in failing to identify clearly the symptomatology and pathology that is clearly an accompaniment of the hypertension and what is not. To illustrate, "strokes" have been clearly identified by the public with "high pressures and hardening of the arteries." Emboli from heart disease, cerebral thromboses in normal tension folk, and hemorrhages in those with normal blood pressures, comprise a large percentage of all cerebral accidents, and remember that even in known hypertensives the total of cerebral accidents is less than 15 per cent. Dizziness, numbness and tingling—what a lot of suffering and perturbation these cause where eyestrain, ear wax, anemia, insomnia and exhaustion states likely are the source!

Despite the detailed and diligent teaching in our schools, interns are still greatly puzzled over the kidney group; the meaning of "malignant hypertension"—how to distinguish this entity from chronic glomerular nephritis. The dissociation is made too difficult. The group is small and chiefly valuable to the general clinician because it has invited and now compels us to study closely and frequently the eyeground retinal changes. It is the only group within our study where diet (reduction of protein) has any excuse at all; and then only in the stage of the disease when the patient has not long to live anyway. Diet reduction for obesity is another matter. The

term "hypertension, with vasospastic trends" would appear better than either the term "precocious or malignant hypertension." The term "precocity," of course, intimates and connotes the young individual (usually a male with a hereditary background) who begins early and runs a turbulent, stormy course.

There has been a most salutary development of interest and bid for coöperation between specialists of the eye and internists in lending their routine and research aid in eyeground study (retinoscopy). From the standpoint of perverted cardiovascular physiology it would seem helpful to attempt to bring together for consideration all processes productive of acute vessel spasm, even as we study fever, quite apart from its symptomatic value. This is one of my chief reasons for introducing into this discussion the intriguing but confusing disturbance, with or without associated kidney pathology, and designated as one of the toxemias of pregnancy, namely, eclampsia. Sufficient for a monograph in itself would be a review (including the various interpretations) of what are grouped under the term "the hypertensive encephalopathies." We have seen two such dramatic entities associated with hypertension, where the retinal changes and the spinal fluid estimations (cell count, et cetera) so closely approximated the picture of "encephalitis" as to be most striking. The most interesting feature pertaining to this attempt at collation is to draw attention to the fact that in eclampsia a reversal of the angiospastic trend follows spontaneous or induced delivery. A possible total loss of vision may be prevented providing the process in the retinal vessels does not go on to anoxicemic and nutritional deficiencies (Wagener) that cause degenerative sequences that are irreversible. This is the notable feature associated with the report of Drs. Brown and Adson where supralumbar anterior nerve root sections have not only dramatically changed the blood pressure readings in this severe "malignant type," but I understand the eyeground changes have been reversed also. This re-emphasizes the great importance of the mechanical vasospastic hyperirritable vasomotor control. It would not appear that such extreme surgery, resulting in such striking interference with "the natural oversights of our internal climate" will be widely attempted; but so far as I

know it is the only method that has caused a delay in the deadly trend of this precocious group. This would appear to be a fertile field for the physiologist to tie up his approach and instrumental measurements with clinical medicine and surgery; and accomplish currently and dynamically something comparable to what the necropsist and pathologist has been able to evaluate for us statically at the postmortem table. Physiologists, while dealing with kaleidoscopic fleeting sequences, have at least the advantage of successive observation; the necropsist has but one!

We come, then, to a large group that are potential myocardiacs* and furnish presently most of our cases of cardiac failure. It is no discredit to the plethora of students in this field (roentgenologists, electrocardiologists, cardiologists) to intimate that the heart itself has been "done to death." It is full time to encourage studies upon peripheral circulation, plasma and lymph formation and much more that has gradually followed upon the pioneering of Starling and Sherrington. Naturally, the excuse for so much primary cardiology is to be found in the great frequency with which "the non-valvular type deficiencies" are seen. Those attending many patients with heart failure will find hypertensive disease behind more than rheumatic disease, syphilis, arteriosclerosis and hyperthyroidism combined. In any case, the problem of the nutrition and oxygenation of the heart is the basic factor, and for diagnostic significance and prognostic outlook nothing is more of value than a correct estimate of the heart weight and size;† the relative proportions, right and left, may be fairly definitely surmised routinely.

§One might make an exception of the triumphant surgery done in certain vacillating hypertensives who give evidence and surgical proof upon exploration of certain types of suprarenal tumors. Their removal has given dramatic relief. Much has also been said recently about x-ray treatment over the suprarenals, intended presumably to lessen the normal activity of these glands.

*Another monographic subject is coronary disease; and a confusion of terms is notorious. Some physiological standards of efficiency should be set off against the pathologist's estimate of calibre shrinkage and intimal invasion. The latter figures of 70 per cent to 90 per cent showing coronary arterial damage in hypertensive disease are correct, but some with very sparing and limited pathology witness the most devastating thromboses; others laid down in concrete accompany senescence.

†Very large hearts, not readily explained by valvular or myocardial or chronic infarctive coronary disease, are likely hypertensive in origin. Some types of kidney shrinkage may induce considerable hypertension but the patient rarely lives long enough to have a very heavy heart. Naturally, congenital defects, pericardial adhesions and certain fatty hearts must be considered.

The Routine Treatment of Myocardial Failure or Exhaustion Not Included

I must again remind myself and my auditors that my subject is the management of the hypertensive factors in a disease that begins as a physiological perversion, and that only after varying periods of months or years does a contest develop between the hypermyotrophy of the media of the small arterioles and a process significantly similar in the heart itself, with the maximum process exhibited in the left ventricle. In this period of development, physiological compensation is easily maintained because of the natural lability of vital processes involved in capillary adequacy and cell metabolism. The so-called "body constants," like the Ten Commandments, may be tested and tried but not ignored; in other words, they survive their fracture. I have implied already that from the eugenic side I consider the hereditary avoidance through eugenic† devisement of parenthood as a bit chimerical at this time. Therefore, it devolves that as far as hyperpiesis is concerned one field of endeavor is to attempt to prolong the period of physiological compensation and defer the organic episodes, fatal in tendency, mentioned previously. Well, we have for this effort a valuable ally in Nature. In fact, natural trends do it so well that all too little is left for us. Stated baldly, when in general the left ventricle fails from any source, and conspicuously from the coronary inadequacy plus gross hypertrophy of the heart, the outlook is bad. A limited life too often follows; the exceptions only prove the rule. It behooves us, nevertheless, to take no laissez faire attitude but fight hard to the finish. We may not be able to "cure the hypertensive disease," but we may do a great deal for "its complications."

Everything, therefore, points to the theoretical value of attempting to prolong to the utmost the stage of equilibrium or myocardial sufficiency. To anticipate the avoidable break requires all the foresight and ability for guidance demonstrable by the best of our guild. Many papers have been written upon the signals and signs of impending failure or distress. To me they are difficult to separate from like fatigue, numb-

nesses, insomnias, twitchings and what-not seen in other people without hypertension. Certain dyspneas (notably nocturnal orthopnea) stand out as such conspicuous reminders of a failing left ventricle that their importance cannot be overestimated. Unhappily, this is not an early symptom. In hypertensives it is not usual to have anginal pain associated with it, but "stenocardial oppression" on effort is often seen.

While I have foresworn and put aside the question of the therapy for the failing heart I must admit that you would scarcely dare not to use digitalis; but as a "sovereign remedy" it has made its reputation elsewhere, notably in the right-heart strain associated with mitral disease. Many would agree with Christian that "tonic doses of digitalis" should be given to all true or threatened myocardiacs. The doubt arises as to when to begin its exhibition, and few patients care to have any medicament exhibited for indefinite periods unless symptomatic betterment is obvious. Therapists no longer argue about the "diuretic properties" of certain digitalis preparations but proceed to take advantage at once of the epochal "physiological diuretics." A better understanding of capillary adequacy, osmotic interchange and physiological chemistry is no longer entirely foreign to the clinician's consciousness. Some perusal of this physiological literature helps to explain the decisive therapeutic value of expensive drugs—xanthin,§ purine derivatives—of which theobromin (with or without a barbitol derivative) is so valuable that its cost is unfortunate. Theophyllin (euphyllin) has the advantage that it may be used by rectum or intravenously.

Factors Promoting Equilibrium

Certainly the keynote of helping to maintain the status of cardiovascular equilibrium is to be

§Tissue (pancreas) extracts by hypodermic, recently suggested and satisfactorily employed in peripheral vascular disease (Buerger's) point to the likely relationship of plant and animal extracts and these purine derivatives in their circulatory effect. Drinker and Field (Lymphatic, lymph and tissue fluids, Williams and Wilkins, Baltimore, 1933), excerpted therefrom: "Of the various things that do not damage capillaries and still promote tissue cell drying, various solutions of dextrose have been most exemplified therapeutically. This sequence is definite: cells lose their water to the tissue fluids. The increased molecular concentration promotes through osmotic pressure further formation of tissue fluid and hence promotes lymphatic drainage. Of all other substances that promote this through toxic or tissue irritant or damage, practically all of them are extracts or from tissue substances containing peptone."

The above statement is very illuminating and bears upon the countless substances of plant and animal origin (richly nuclear material) which have been advised and suggested to accomplish various things, including a depression of blood pressures. The manner of their pharmaceutical influence does not exclude various degrees of what is known as "shock therapy."

†"Genes and jeans" come into conflict. The one may carry high potential possibilities for posterity; the others contain nothing adequate to finance the economic adventure of matrimony. Parents may come some time to have more influence than they have presently. Theoretically, at least, two people presumably conditioned to hypertension should not marry.

sought in the many and diverse aids furthering relaxation. As to drugs, I have no confidence at all in specifics. Calcium bromide* is my chief personal ally, with certain barbiturates and sodium amytol next in service. The field for the fusser—the eradication of foci of infection, or dieting except for obesity—is very limited. We should be called upon (but seldom are) by men entering upon enterprises apt to be heavy and demanding too much strain. In general, unless they are definitely out of equilibrium they stand the usual surgical procedures very well. I need not attempt any detail as to the technic we should adopt to direct the mental and physical orbits of our hypertensives.

Detail interference is not to be compared with the kindly planting of the seeds of suggestion. Some of these may grow to fruition in pleasing and solacing avocations. Ennui suffices not for hypertensives. Of man's five instinctive trends

*It is fair to presume that the most effective drugs ease down the vasomotor center and thus lessen the universal load. The nitrites are truly evanescent, and drugs like sodium sulphocyanate and bismuth subnitrate, used empirically and given considerable credit by some—all such have fallen into disuse.

the hypertensive subject is weakest in his abuse of ambition and seeking for bettering his station in life. He is the "go-getter." He places overmuch confidence in intellect and its search for fact. He is soured when the "facts of today become the fancies of tomorrow." His esthetic faculties are dwarfed and he is patronizing toward beauty and the arts or music and poetry, rather than enslaved by what so easily becomes a diverting tyrant. The question of morals leads him all too easily to the Nietzschean philosophy of success and renders him less "socially adequate" than he thinks he is. His desire to make others conform to his tempo often makes him not the best of companions even for himself. We usually start too late to divert him successfully. Where given an earlier opportunity we may offer suggestions which may assist him to grow old gracefully. It should help him to be taught that there is much in life to be gained by cultivating friendship and contemplation. Perhaps the gist of it all is "to avoid taking himself too seriously."

LYSOZYME: ONE OF THE NATURAL DEFENSE FACTORS OF THE EYE

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SINCE the earliest days of ancient medicine, all sorts of magical healing powers have been attributed to the body fluids and excretions. Modern scientific medicine also makes some remarkable claims concerning the properties of the body fluids, such as, for instance, those of the internal secretions and the antibodies of the blood. But we no longer consider such powers as occult or magical because our understanding of them is somewhat better. One of the latest of the body fluids to come into the limelight on account of its natural antiseptic properties is the lachrymal fluid. The material that makes the tears antiseptic was discovered by Alexander Fleming in 1922. He called it "lysozyme." Since 1922 there have been at least twenty-five articles written about it, but because almost all of these have been in foreign journals, we have not become familiar with the substance. I shall summarize very briefly some of the facts

that have been learned about this interesting material. I hope that you will pardon a rather didactic type of approach to the subject. It is difficult to make it anything else.

Lysozyme may be defined as an enzyme which is normally present in most of the body tissues and fluids and which has the property of dissolving certain kinds of bacteria. Its occurrence is widespread and by no means confined to man. It is found in a number of the lower animals, in varying amounts in eggs, and also to some extent in certain vegetables, such as the turnip.

In the fluids of the human organism it reaches its highest concentration in the tears and is probably largely responsible for the nearly-sterile condition of the conjunctival sac. The content in nasal mucus and sputum is also high. On the other hand, there is said to be none in either spinal fluid, sweat, or urine.

Among the tissues, the greatest concentration

is found in cartilage. Leukocytes also have a very high content according to Ridley,²⁶ who has estimated their content to be at least as great as that of the tears.

Some of the chemical properties of lysozyme have been fairly well worked out. It seems definitely settled that it is an enzyme. It has been purified to a high degree by Wolff,²⁹ who obtained it from egg white. When dry, it is a yellow amorphous powder that dissolves readily in water and does not give a protein reaction by the usual test. It filters very poorly and dialyzes poorly or not at all. For this reason it is thought to be a colloid when in solution. It has been kept for two years in dried egg white and for one year in acetone and alcohol.

Lysozyme acts best at a fairly high temperature, much above body temperature. Fifty-five degrees C. is the optimum (130 F.). Boiling destroys it if it is in a neutral solution, but if the solution is slightly acid it will tolerate a boiling temperature for a few minutes. One of the most interesting chemical characteristics is that lysozyme will not act in the absence of a salt. Any one of a number of salts may be used in the solution. Too much salt stops the action: 0.5 per cent is the optimum; 2 per cent retards the action; and 5 per cent inhibits it altogether. The reaction has a marked influence. It acts best in a neutral solution. A slight change either way retards its action. Acid, however, is tolerated much better than alkali.

Wolff²⁹ is positive that it is not an antigen. He and other workers also agree that it is distinct from bacteriophage. Points of difference are as follows: Lysozyme acts immediately, whereas phage requires an incubation period of many hours; lysozyme acts on both living and dead bacteria, whereas phage acts on the living only; lysozyme acts at a somewhat higher temperature than phage.¹⁰

The effect on bacteria depends upon the particular strain used. There may be no effect at all, or growth may be inhibited, or the bacteria may be killed but not dissolved, or the bacteria may be destroyed and completely dissolved. With certain susceptible strains complete solution or lysis takes place in unbelievably dilute solutions. Egg white has been reported to be effective in a dilution as high as 1:60,000,000 and tears as high as 1:512,000.

The concentration of lysozyme present is esti-

mated by means of this lytic effect on bacteria. Most workers have used the organism described by Fleming.⁹

Lysozyme is most effective against the so-called non-pathogenic bacteria and is much less effective against the pathogens. It is especially deadly to the bacteria which are ordinarily found in the atmosphere and is found in greatest concentration in those secretions most exposed to the air, namely, tears and nasal mucus. *Micrococcus lysodeikticus*, which Fleming cultured from the atmosphere, is destroyed and dissolved by tears or nasal mucus in thirty seconds. Of 104 other strains taken from the air and tested by Fleming, 75 per cent dissolved more or less completely in 1:100 sputum. Twenty-eight per cent were completely dissolved in one hour. Of the bacteria found in the human body, intestinal streptococci are most susceptible and the *B. coli* group are least susceptible. This explains one of my own experiences. Some years before hearing about lysozyme, I tested some nasal mucus for the presence of a possible rapidly-acting antiseptic. The method was to watch bacteria suspend in mucus under the microscope. Thinking that motile ones would be easier to judge, I selected *B. coli* and *B. typhosis*. The selection could not have been more unfortunate as far as lysozyme is concerned, because these belong to the most resistant group of any. Needless to say, the results of the experiment were nil.

The lytic power of lysozyme is not lost through use (Fleming,¹⁰ Nakamura²⁴). A sample may be used repeatedly without losing its potency.

On the other hand, bacteria that have been exposed to lysozyme and survived become very highly resistant and this resistance persists through numerous subcultures.*

The action of artificial antiseptics on lysozyme is rather startling. They have not been tested very extensively, but it appears from Fleming's and Cavka and Prica's work that some of the common antiseptics are much more destructive of lysozyme than they are of bacteria. That is the case, for instance, with chloramine T. com-

*This may explain the difference between two microbes that have been in the limelight a great deal in recent years, *B. abortus* and *B. melitensis*. *B. abortus* is the cause of abortive fever in cattle. The organism of undulant fever in man is *B. melitensis*. It has been shown that these two organisms are identical, yet they differ in this, that *B. abortus* is destroyed by lysozyme and *B. melitensis* is not. The latter seems to be nothing more than a strain of the former which has become resistant to man's defenses and can therefore invade.

LYSOZYME—HILDING

TABLE I

February 11, 1933		February 12, 1933									
	Dilutions	P. M. 9:38	P. M. 9:50	P. M. 10:15	P. M. 10:40	P. M. 11:15	A. M. 12:40	A. M. 3:00	A. M. 9:30	A. M. 5:30	
Experiment Begun 9:05 P. M.											
Tears.....	1:10	50	75	100	100	100	100	100	100	100	
	1:20	?	50	80	100	100	100	100	100	100	
	1:40			50	75	100	90	100	100	100	
	1:80				?	50	75	100	100	100	
	1:175			?	50	60	75	100	100	100	
	1:325								50	75	
	1:650							?	60	90	
	1:1300										
Experiment Begun 9:03 P. M.											
Nasal Mucus.....	1:10	50	75	100	100	100	100	100	100	100	
	1:20	?	50	75	100	100	100	100	100	100	
	1:40				75	80	100	100	100	100	
	1:80				50	80	90	100	90	90	
	1:175					50	50	66	50	75	
	1:325					50	60	90	100	80	
	1:650									50	
	1:1300								60	75	
Experiment Begun 9:01 P. M.											
Aqueous Humor.....	1:10					50	60	75	100	100	
	1:20					?	40	50	30	50	
	1:40						40	60	66	100	
	1:80					?	50	75	66	75	
	1:175									50	
	1:325										
	1:650				50	50	90	100	75	100	
	1:1300									50	
Experiment Begun 8:45 P. M.											
Lens Matter.....	1:10					50		?			
	1:20										
	1:40					?					
	1:80							?			
	1:175					50	75	50			
	1:325										
	1:650					25	50	50			
	1:1300										
Experiment Begun 8:56 P. M.											
Vitreous Humor.....	1:10					?	?				
	1:20										
	1:40										
	1:80										
	1:175										
	1:325										
	1:650						50	80			
	1:1300										

Comparative lytic powers of tears, nasal mucus, and aqueous humor, lens matter, and vitreous humor. The dilutions of the substances tested are given in the left hand column, and the hours when the tubes were examined, across the top. The other figures represent the percentage of clearing of the bacterial suspension due to lysis of the bacteria by lysozyme. The suspension was made from bacterial strain No. 9. The dilution 1:10 in both tears and mucin cleared completely in about one hour. The tears cleared the 1:175 dilution in about six hours, and the mucus cleared the 1:80 dilution in about the same time. The first tube of aqueous (1:10) is the only one of the tubes containing any one of the three intraocular materials that cleared completely and that required twelve hours.

monly used in gargles. This inhibits the action of lysozyme in a dilution of 1:32,000, whereas it takes a hundred times as much to inhibit the growth of staphylococcus in blood. All antiseptics do not have this destructive effect.

Ultraviolet light, which was in rather general vogue just a short while ago in treatment of colds, is very destructive of lysozyme (Hallauer¹⁵).

Several of these workers feel certain that lysozyme is one of the powerful natural defense agents against bacterial invasion. Some of the strongest indication that this is so comes from studies on the eye.

There are at least three reports upon the relation of lysozyme to the eye and its diseases, namely, those of Ridley, Oluf Anderson, and Cavka and Prica. The lytic effect or titer of the

LYSOZYME—HILDING

TABLE II

Strain 12 April 4, 1933		April 5, 1933 10 A. M.					
	Set up at	1:35	2:00	3:00	4:30	5:30	
Tears.....	1:11	75—	75	100	100	100	100
	1:45	50	75—	100	100	100	100
	1:180	?	50	75	75+	75	100
	1:725	?	?	50	75	75	100—
	1:2890			?	50—	50	75
Aqueous.....	1:11		?	?	?	?	50
	1:45			?	?	?	75
	1:180				?	?	75
	1:725			?		?	50
	1:2890						
Lens.....	1:11						
	1:45						
	1:180			?	?	?	?
	1:725						
	1:2890						
Vitreous.....	1:11						
	1:45						
	1:180						
	1:725						
	1:2890						

A test of the comparative lytic power of tears, aqueous, lens matter, and vitreous in five different dilutions. The dilutions of the substances tested are given in the left hand column and the hours when the tubes were examined, across the top. The other figures indicate the percentage of clearing of the test tubes due to lysis of the bacteria in the suspension. Strain No. 12 was used for these tests.

tears varies with each author, since each used a somewhat different technic. All found it normally very high. With micrococcus lysodeikticus complete lysis took place in dilutions varying from 1:40,000 to 1:60,000.

All three of these studies report a moderate to marked reduction of the titer in a number of external eye diseases. It is most marked in xerophthalmia. In this disease it drops to a small fraction, around one-sixth normal (Anderson¹). Anything causing epiphora, even foreign bodies, cause a moderate drop. Five cases reported by Ridley titrated at 45 per cent of normal. This may be partly a dilution phenomenon. Conjunctivitis from almost any cause exhibits a drop of 30 to 60 per cent. This drop does not occur in chronic conjunctivitis such as that accompanying chronic dacryocystitis. In this condition the titer is very apt to be normal. A moderate fall has been found to accompany trachoma, corneal ulcer, hypopyon ulcer, phlyctenular conjunctivitis, phlyctenular keratitis and deep keratitis. One patient with a foreign body in the eye suffered also from a chronic tear sac infection. When the titer fell with the epiphora, an infection of the conjunctiva developed. When the titer rose the conjunctiva cleared up, but the tear

sac remained as before. Neither Ridley nor the others make it clear if the lysozyme titer falls before or with these external diseases and whether the rise in titer precedes or accompanies the healing process. It seems to me that this is a very vital point, if the fall in lysozyme content is to be taken as an etiologic factor.

The etiologic rôle of a reduced lysozyme content of the tears in xerophthalmia is much more complete and convincing than in any other eye disease. It is common knowledge that xerophthalmia results from vitamin A deficiency. Findley (quoted by Oluf Anderson) has demonstrated that the lysozyme titer falls in vitamin A deficiency. Pillat, working in China, has shown that in vitamin A deficiency, the cornea is full of growing bacteria some time before the xerophthalmia develops. Findley has delayed the appearance of xerophthalmia in vitamin A deficient rats by simply instilling human tears into their eyes. Oluf Anderson reports two twins with vitamin A deficiency and xerophthalmia. One showed keratomalacia on admission; the other was more incipient. In the former the lysozyme titer was down to one-eighth normal and in the latter to one-sixth. There was no suspicion of dilution here because there was

very little tear production in either. As soon as vitamin A was fed, the titer began to rise in both and reached normal in four days in the severer case and three days in the other. The former developed complications because of corneal perforation, but both recovered from the xerophthalmia. The author implies but does not make entirely clear that the rise in titer preceded the clinical improvement. If so, it seems fairly definite, combining these various reports, that the fall in the lysozyme content of the tears is the determining factor in the development of infection and keratomalacia in xerophthalmia.

These reports by our European confreres stimulated me to make some studies of lysozyme in relation to certain diseases of the eye and nose. As yet this work is in its infancy and I shall content myself with reporting only a few experiments on the eye at this time.

It has been said that the lens matter of the eye is very easily infected as compared, for instance, to the vitreous humor. In order to determine if this difference might be due to a difference in lysozyme content, a series of comparative determinations of lytic power were made on a group of five different substances. These were as follows: My own tears and nasal mucus, and the lens matter, vitreous, and aqueous humor from fresh pigs' eyes.

Method.—The method used for determining lytic power was simply to mix known dilutions of the material to be tested with saline suspensions of strains of bacteria known to be susceptible to lysozyme. Two different strains of bacteria, called No. 9 and No. 12, were used.

The tears were aspirated from the conjunctival sac after instilling a drop of lemon juice. There was no special difficulty in obtaining the nasal mucus. The other materials were obtained from three pigs' eyes. The eyes were thoroughly washed and the lenses extracted as in a cataract operation. The aqueous from all three was collected in one dish as it flowed out past the knife. The three lenses were washed and then ground up together. A separate incision was made far back on the sclera in order to obtain vitreous fairly free of aqueous. The vitreous also from all three eyes was mixed. Thus the samples of pig material tested represented mixtures from three eyes.

Three sets of determinations were made on three different days. In two, each of the five

materials were tested in eight different dilutions, using strain No. 9. The results of one of these sets of determinations is given in Table I. In the third, strain No. 12 was used and the mucus was omitted (Table II).

After the dilutions had been made and the bacterial suspension added, the test tubes were incubated and examined for lysis from time to time as indicated in the tables. The degree of lysis was estimated in the first two sets of determinations, simply by judging its density with the eye as compared with the control of full strength bacterial suspensions. In the third set of determinations (Table II) a battery of eight control tubes of varying bacterial content was used for comparison.

Results.—As was to be expected, the lytic power of tears was the greatest. Nasal mucus ran a close second. Aqueous seemed to be feebly lytic but this was not without question. Vitreous humor and lens matter appeared to be devoid of lytic power. Some of the lower dilutions showed partial clearing that was not consistent. As far as these experiments go, one must conclude that aqueous contains little, if any, lysozyme, and lens and vitreous none at all, while tears and nasal mucus, on the other hand, contain a great deal.

Summary.—There is a natural antiseptic, chemically an enzyme, that is found widespread through the body fluids and tissues. It has the power of destroying and dissolving certain groups of bacteria even when highly diluted. It is found most abundantly in tears, very abundantly also in nasal mucus. Its purpose in these two secretions seems to be to protect us from the atmospheric bacteria for which it is very deadly. The pathogenic bacteria are inhibited in their growth by it but are not necessarily destroyed. The lysozyme content of tears falls moderately in a number of the acute external diseases. In fact, it falls during any epiphora. That this has any etiologic significance is not thoroughly established. In vitamin A deficiency and xerophthalmia, however, there is a very marked decrease in lytic power that seems fairly definitely to have an etiologic importance in the development of infection and keratomalacia. The three humors within the eye showed little or no lytic power when tested, and therefore, probably contain little or no lysozyme.

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Note.—The article from Yugoslavia, by Cavka and Prica, came to my attention after this work had been done. These authors made a number of determinations on the aqueous and lens of man but none on the vitreous.

THE USE OF LIVING SUTURES IN THE REPAIR OF ABDOMINAL HERNIAS*

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THE repair of congenital inguinal hernias in cases in which patients were children or young adults has for many years been considered very satisfactory, and the published statistics from hospitals where large numbers of young patients are operated on for hernia leave little to be desired, as most reports indicate a recur-

rence of less than 2 per cent. On the other hand, postoperative hernias, recurrent hernias, direct inguinal hernias, sliding hernias, and large indirect inguinal hernias among elderly patients always have been considered real surgical problems with a high percentage of unsatisfactory results. During the World War, however, a very large number of healthy young men were operated on for indirect inguinal hernia, and I

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think the members of the medical profession as a whole were surprised at the number of recurrences that were noted, for it was known that the surgeons in the army hospitals were competent.

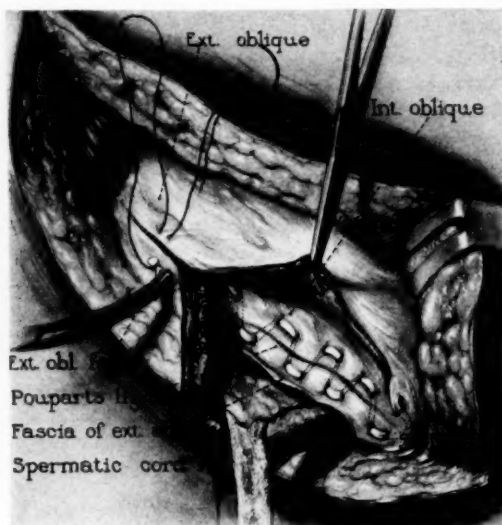


Fig. 1. Use of fascia lata in repair of inguinal hernia.

Many different technics and suture materials have been advised at different times for all varieties of hernia. This in itself indicates that no one method or suture material has been entirely satisfactory. At various times and by different surgeons filigrees of silver wire have been advised to bridge the gap through which the hernia passes. Nonabsorbable suture material, such as different kinds of wire, silkworm gut, silk, and linen, have been used extensively by some. Absorbable suture materials, such as catgut, kangaroo tendon, ox tendon, and so forth, are used by most surgeons at present. Different irritating solutions are injected by some surgeons with the idea of closing the hernial opening with scar tissue. Occasional cases are seen in which paraffin has been injected by some pseudo-surgeon.

In 1901, McArthur suggested using pedunculated strips of the aponeurosis of the external oblique muscle in place of ordinary suture material in the plastic repair of inguinal hernia. Apparently the method was used only by a few surgeons. Reports on the method, however, have been that results are entirely satisfactory, and

examination of tissue at necropsy when the patient has died of a condition unrelated to hernia has showed definitely that the transplanted tissue lives and is firmly united to all tissues through which it passes. Infection is no doubt responsible for many failures following operations for hernia but, when living sutures are used, there is probably less danger than when foreign material is used.

In 1923, Gallie and LeMesurier, after carefully verified, experimental work, suggested the use of living sutures taken from the fascia lata of the patient himself, and in more recent papers they have been able to report most excellent results following the use of this material, not only in all types of inguinal hernia, but in the huge, postoperative variety of hernia and also in umbilical and femoral hernias. I have been impressed with the value of this type of suture material and have used it extensively in recent years.

I will not have time to go into the experimental work of Gallie and LeMesurier, but suffice it to say that they found that "pedunculated or free transplants of fascia or aponeurosis, if placed in such a position that they receive an adequate supply of lymph, continue to live unchanged." They also found that the tensile strength of the sutures remained constant and that they neither stretched nor contracted. As the result of passing through a needle hole in the tissues, the strips assume a more or less rounded form and, on cross section, closely resemble a tendon.

For several years, I have been using a modified McArthur technic for closure of the inguinal canals in indirect hernias. After high removal of the sac, a single strip of fascia is used, $\frac{1}{4}$ inch (0.7 cm.) wide, which is taken from the edge of the opening in the aponeurosis of the external oblique; the strip is left attached to the spine of the pubis. The inguinal canal is closed with a running mattress suture, behind the spermatic cord. A good hold is taken in satisfactorily strong tissue on the medial side, and, if necessary, stitches are placed in the rectus muscles in closing the lower part of the canal. On the lateral side a series of good catches is secured in the inguinal ligament. Care is taken to avoid tearing by placing sutures at varying distances from the free, recurved edge of the inguinal ligament.

ABDOMINAL HERNIAS—MASSON

In case there is very poor development of the internal oblique and transversalis muscles in the region of the lower half of the inguinal canal, it is often impossible to approximate any tissue from the inner side of the inguinal canal to the

be used, and this is advisable in the more difficult cases.

In the repair of postoperative and umbilical hernias, I am very partial to some form of plastic overlapping (Fig. 2). It is seldom indeed that

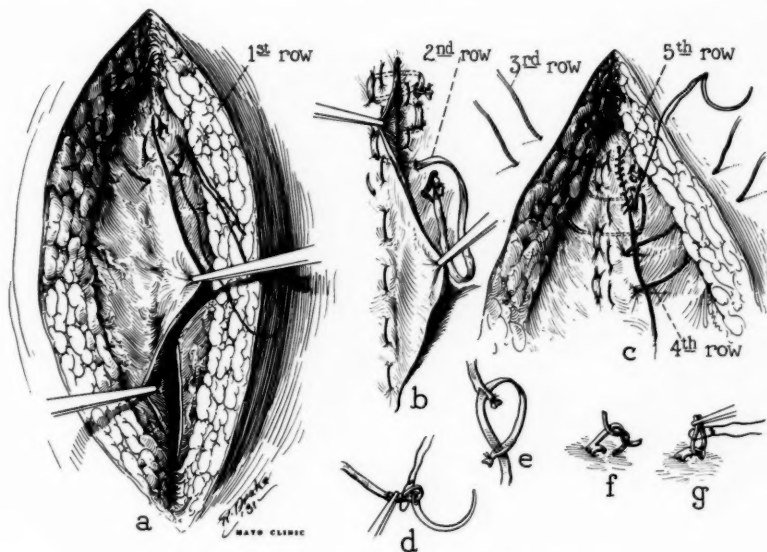


Fig. 2. Repair of postoperative hernia with fascia lata.

inguinal ligament without undue tension (Fig. 1). In such cases this space may be filled with a filigree of fascia made from sutures taken from the fascia lata of the thigh, in much the same way that a hole in a sock is filled with yarn in darning. Any attempt to fill the defect by drawing the tissue together under tension will predispose to cutting of the sutures and to failure. I like to make fairly tight closure of the internal abdominal ring and further to strengthen the closure by carrying the aponeurotic suture around the medial side of the ring and anchoring the suture into the inguinal ligament above the cord. The danger of interfering with the circulation in the spermatic cord is not so great as some surgeons seem to believe. Postoperative atrophy of the testis results, in most cases I am sure, from injury to the spermatic artery at the time of operation. In the majority of cases I like to bring the aponeurosis of the external oblique muscle beneath the cord also, as it adds strength to the weakest part of the closure; for this purpose I generally use number 2 chromic catgut. Another strip of fascia lata can

all the tissue covering the hernia is valueless as repair material and, in a majority of cases, I am able to save sufficient tissue to overlap one side on top of the other in such a way that the scar tissue from one side reaches the muscle on the other, and vice versa. This double layer, consisting more or less of scar tissue, would in itself probably be sufficient to stand the strain of ordinary intra-abdominal pressure in many cases, especially if the hernia follows a wound in the upper half of the abdomen. However, if a patient is obese, or if the hernia occurs in the lower part of the abdomen, some additional support is necessary to withstand increase in the intra-abdominal pressure which is sure to result from sneezing, coughing, straining at stool, and so forth. This support, I feel, is satisfactorily obtained by using strips of fascia lata as running mattress sutures across the weakened region, taking frequent bites into the imbricated hernial sac, and reaching well past the sides of the hernial opening into normal tissues. In many cases it is also advisable further to strengthen the closure by running a few sutures of fascia at right

angles to the others, catching into them whenever possible. In some cases of small postoperative hernia, it is possible to replace the hernial sac without opening it and to make secure closure by approximating the edges of the opening

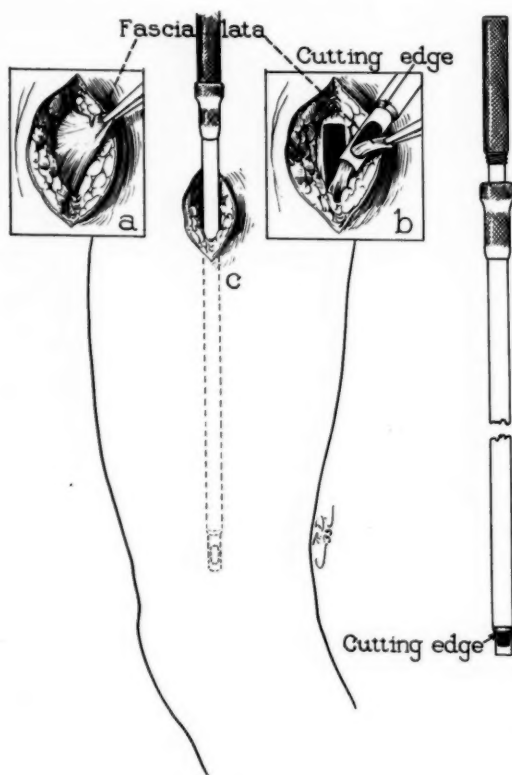


Fig. 3. Stripper used for obtaining fascia lata in repair of hernia.

with living sutures, or to close the gap between the edges with a basket-weave type of closure, using strips of fascia lata, some sutures running transversely and others longitudinally. I do not think this replacement without opening is a safe procedure, however, for large hernias, or when loops of intestine are adherent in the sac, because of the danger of obstruction as a result of changed relations. For hernia following incisions low in the median line, when there has been considerable loss of muscle close to the pubis, and approximation cannot be obtained without a great deal of tension, it is frequently advisable to fill the gap with a solidly interwoven mat of fascia.

In all operations for hernia, especially when

the hernia is large and a considerable portion of intestine has become accustomed to remain outside the abdomen the greater part of the time, spinal anesthesia is of special benefit to both patient and surgeon, on account of the excellent relaxation of abdominal muscles. The operation then can be completed with a minimal amount of trauma to the abdominal viscera.

The ordinary closure of the crural canal for femoral hernia is not satisfactory, and it is surprising that there are not more recurrences following this method of closure. The crural canal is funnel-shaped, with the large end of the funnel pointing downward; in the ordinary closure, the pectineus muscle is pulled up into the canal thus blocking the outlet but doing little or nothing to prevent a new hernia starting at the inlet. What probably happens in most cases is that a preperitoneal tag of fat does descend into the upper part of the canal but adheres there and effectively holds back the hernial sac. By the use of living sutures, I feel that the canal can be much more effectually blocked. I have used the method in only a few cases of the kind mentioned, but I think it is indicated in all cases in which there is a large crural canal. The hernial opening is closed simply by carrying several stitches (using one living suture about 8 inches, 20 cm., in length) from the upper part of the pectineus muscle up through the canal and through the aponeurosis of the external oblique muscle just above the inguinal ligament. No attempt is made to approximate the tissues; the fascia simply blocks the canal. If this technic is used, it is necessary to make only a vertical incision about 2.5 or 3 inches (6.5 or 7.5 cm.) in length directly over the hernia, and another short incision in the thigh to get the strip of fascia.

With umbilical hernias, I always enlarge the hernial opening out to the edge of the rectus muscle on each side and then do a plastic, overlapping closure, as advised by Dr. W. J. Mayo, bringing the peritoneum of the upper flap, after removing any adherent fat from it, into direct apposition with the external sheath of the rectus muscle on the lower flap, which has been thoroughly cleaned of fat and scarified; I use twenty-day chromic catgut and two to four tension sutures of silkworm gut. This method gives excellent results. In most cases, however, I am sure the addition of living sutures taken from

the fascia lata will greatly strengthen the closure; they should be used in exactly the same manner as was suggested for postoperative hernia.

One serious objection to the use of fascia lata as a suture material has been the extra time required for operation. Gallie suggested making an incision on the outer surface of the thigh, practically as long as the sutures to be removed. In order to save time, he advised having one surgeon prepare the aponeurotic sutures and another operate on the hernias.

About a year ago I perfected an instrument made of two tubes of steel (Fig. 3). The inner tube is slightly longer than the outer one and has an opening in one side, close to the lower end, through which the upper end of a strip of fascia is threaded. The outer tube, which has a cutting edge on its lower end, is used to cut the fascia free. This instrument has been very satisfactory and saves considerable time. After the strip of fascia has been obtained, it can be subdivided into three or four separate sutures to be used in the repair of the hernia. While one is being used, the others can be retained within the incision that has been made in the thigh, to keep them moist and warm. By this technic very little extra time is taken in securing the living sutures or in closing the wound.

Gallie's technic of using the sutures on a heavy, short needle with a large eye, and tying them securely to it, has been very satisfactory. On account of the slippery nature of fascia it is practically impossible to tie it in the ordinary way and, although it is very strong on a straight pull, it splits in a longitudinal direction very easily. For this reason the free end is securely tied with silk or chromic catgut and, after a single stitch has been taken in solid tissue, close to the edge of the hernial opening, the needle is carried through the suture itself, close to the ligated end, to form a slip knot and firmly to anchor the suture. When all of one piece of suture material has been used, another can be joined to it by tying the free ends with silk, to prevent unraveling of the fascia, and then by stitching the second piece through the end of the first and locking it there. Sufficient fascia for prac-

tically any hernia can be obtained from one thigh, but if necessary both thighs may be used. Probably the simplest and, I am sure a satisfactory, way to end the suture is first to ligate it close to the free end, with silk or catgut, and then to secure it to good muscular or aponeurotic tissue by suture and ligation.

I do not feel it necessary to close the gap in the fascia lata after removal of living sutures. Since I began using the stripper, I have never had to make a long incision in the thigh and have not, therefore, had an opportunity to close the gap; I have not encountered a case in which trouble has arisen because of this procedure. The worst that can happen is to have a muscle hernia, and I am satisfied that this will develop only when a large amount of fascia has been removed. Such a hernia is never the cause of symptoms, but I always make it clear to the patient what may occur, and assure him that the muscle hernia will not incapacitate him in any way, even if it bulges considerably during exercise. I further impress on him the fact that he should not let anyone operate on it.

I am satisfied that with the addition of living sutures to the armamentarium for repair of hernia, a higher percentage of cures can be obtained than was possible formerly. Furthermore, many hernias which were formerly considered inoperable can now be safely and satisfactorily repaired by using procaine as a spinal anesthetic agent and by using living sutures, either alone or in addition to some absorbable suture material that will last about twenty days.

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CLINICAL STUDIES IN JUVENILE RHEUMATISM*

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THIS study was undertaken for two main reasons, first, to observe the development of rheumatic disease in children in this part of the United States to determine whether or not it differs from the same disease in other parts of this country and abroad and, second, to determine the expectancy of recurrences in non-specifically treated rheumatic disease in children, this information to be used as control data in estimating the efficacy of specific types of therapy.

During the past twelve years I have had the opportunity of observing the development of rheumatic disease in several hundred children. These patients were first seen either during their first attack of rheumatic fever or chorea or more often immediately after their first attack when they were supposedly well and had returned to school. This work was carried on at the Minneapolis Public School Heart Clinic at Lymanhurst and also at Dowling School, where a number of cardiac children receive special care and education. The group of patients at Dowling School has been examined each week for the past eight years. Careful temperature and weight curves and continuous clinical notes have been kept on all these patients during this time. The rest of the cases have been observed in the outpatient cardiac clinic and many of these children have been studied for a period of ten years or more.

Juvenile Rheumatism and Chronic Arthritis

The term juvenile rheumatism is used to designate the type of rheumatic infection which most commonly occurs in early childhood and which causes 90 per cent of all heart disease in children and young adults and is responsible for about 40 per cent of all deaths due to cardiac disease. Juvenile rheumatism includes rheumatic fever, chorea and the very important and often unrecognized subacute form of rheumatic infection in children erroneously termed "growing-pains." Without entering into the controversy as

to whether or not rheumatic fever and chronic arthritis are manifestations of the same disease appearing at different age periods, as far as I have been able to determine juvenile rheumatism has little if anything in common with chronic arthritis. In the hundreds of cases of rheumatic infection which I have followed for the past twelve years I have never seen one instance where the patient developed chronic arthritis directly following juvenile rheumatism. I have seen four patients in whom several joints remained swollen and tender for a period of months following an acute attack of rheumatic fever but in every instance the joints did finally clear up entirely with no x-ray or other evidence of permanent joint damage. Chronic arthritis rarely if ever produces valvular heart disease and heart disease as a complication of the chronic arthritides need hardly be considered. On the other hand, in juvenile rheumatism involving the joints, little concern need be given to permanent joint damage but the most important phase of the rheumatic problem in childhood is the great danger of permanent cardiac damage.

Age of Onset

Juvenile rheumatism, whatever its first manifestation, has its inception in early childhood; the peak of incidence in Minneapolis is between five and six years of age as shown by Figure 1. This is somewhat younger than the figure given in other parts of this country and abroad. A study of our case records shows an equal rate of occurrence as to sex. In various other clinics, females predominate over males and it is commonly taught that girls have considerably more rheumatic infection than boys. I believe that our figures are probably more nearly correct as we have been able to obtain a more average cross-section of these patients than is obtainable by a clinic not connected with the school system. It has been stated by some of the English observers that rheumatic fever rarely occurs before the third year of age. This has not been found true in our clinic. We have seen several children who ac-

*From the Lymanhurst School Cardiac Clinic. Read before the annual meeting of the Minnesota State Medical Association, Duluth, July 17, 1934.

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quired their first attack of juvenile rheumatism in the first two years of life.

Seasonal Incidence

In determining the seasonal incidence of juvenile rheumatism in Minneapolis, all attacks of rheumatic fever and chorea in a series of cases

is a low-grade contagious disease and a number of so-called epidemics have been reported in hospital wards and in some of the boarding schools in England. A study of our records corroborates this finding. It is rather startling to observe how often a history of rheumatic disease in early childhood is given by the parents of our patients.

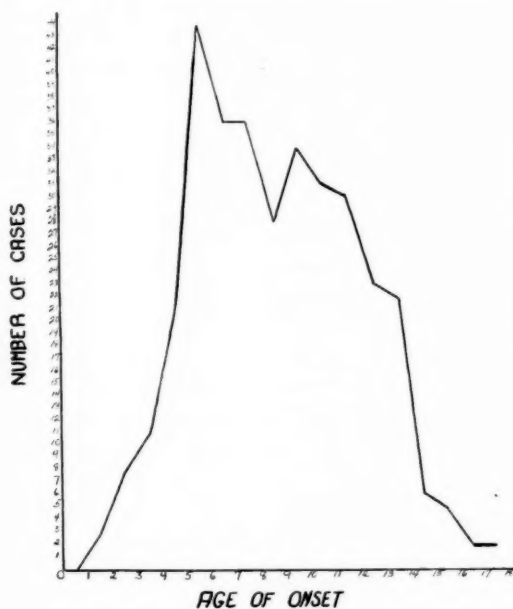


Fig. 1.

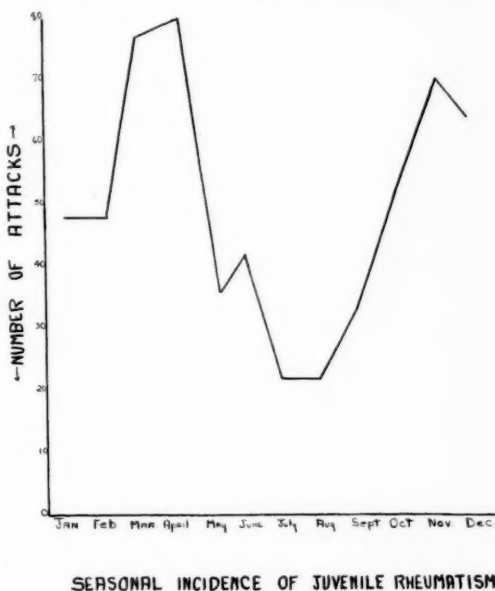


Fig. 2.

were studied. As Figure 2 shows, the frequency curve rises abruptly in February, reaches a peak during the months of March and April, drops abruptly during the Summer months and rises again during the Fall months of October, November and December. As has been shown in other parts of the country, rheumatic disease in childhood is most common during the early Spring and late Fall. An explanation for this seasonal variation has not as yet been definitely determined. It has been suggested that this variation is related to the seasonal rise in frequency of upper respiratory infections. It is possible, too, that this seasonal variation may be due to dietary deficiencies which are more prone to occur at the end of a long winter.

Family Incidence

It has been shown that rheumatic infection is probably more familial than tuberculosis. There is considerable evidence that juvenile rheumatism

is not uncommon to find two or even three children in the same family suffering from rheumatic fever at the same time. I have one family under my care at the present time in which five brothers and sisters have had either rheumatic fever or chorea or both. One of these children has already died of valvular heart disease, two have badly crippled hearts and two have definite evidence of early mitral valve involvement. The mother of this family gives a history of rheumatic fever in childhood, but as far as I know has no cardiac involvement. In order to point out our experience in the matter of family tendency I have gone over all the cases observed during the past school year, 1933-34. During these ten months 370 patients have been examined at the Clinic and at the Dowling School. As Table I reveals, 201 of these children gave a history of juvenile rheumatism and 120 of them had already definite rheumatic heart disease. Sixty-seven had congenital heart disease, forty-

four presented murmurs of a non-pathologic nature, five had neuro-circulatory-asthenia, six had extra-systolic arrhythmia and forty-seven were found to have no cardiac disease. In comparing the family histories of the children who had suffered from rheumatism with the families of all the other children examined as controls, it was found that in 46.7 per cent of the families of rheumatic children other members gave a history of rheumatic infection in childhood while in the control group only 14.7 per cent gave such a history, indicating that the family tendency is three times as great in the rheumatic group as in the control group. These bare figures do not, however, tell the whole story. All these histories have been taken by me and it was found that in the rheumatic group two, three or even more members of a family gave a positive rheumatic history while in the control group it was rare to obtain a history of more than one other member of a family with a positive history. An explanation for this familial tendency in childhood rheumatism is not at present clear. It has been suggested that housing has something to do with it; the English especially feel that damp and unsanitary homes may have an important bearing in this matter. Others have felt that diet may be the important factor; still others believe in the contagiousness of the disease.

Errors In Diagnosis

It may be of some value to point out the nature of some of the errors in diagnosis encountered at the Clinic. It will be noted in Table I that of 370 patients examined during the past year 102 were found to have no organic heart disease. Many of these children had been examined by their own physicians and in too many instances a diagnosis of serious heart disease had been made. In some cases children had been put to bed for weeks and months because a systolic murmur was heard at the apex or an extra-systole was present and in other instances no reason could be made out for the error in diagnosis. I should like to point out the seriousness of making a mistaken diagnosis of heart disease in an impressionable child by citing two cases which came under my observation recently. The first case is that of a sixteen year old girl who was told she had heart disease more than two years ago. She had been kept in bed for almost a year and since being out of bed has such a fear

TABLE I. FAMILY TENDENCY IN JUVENILE RHEUMATISM COMPARED WITH FAMILY TENDENCY IN NON-RHEUMATIC CHILDREN

Diagnosis	Cases	Total number of cases	Family incidence	Percentage
Rheumatic heart disease	120	201	94	46.7
Potential heart disease	81			
Congenital heart disease	67	169	25	14.7
Non-pathological murmur	44			
Neuro-circulatory asthenia	5			
Extra-systolic arrhythmia	6			
No heart disease	47			
Total number of cases examined 1933-1934	370			

of "dropping dead" that she refuses to be alone, is unable to attend school and has become a total invalid. Her family had moved into Minneapolis in order to have her admitted to the special school for cardiac children. On examination, no cardiac disease could be made out. There was a blowing systolic murmur at the apex which proved to be functional in nature. Repeated attempts were made to urge this girl to enter school, she was assured that her physical condition was good but all our efforts failed and she is at present practically incapacitated due entirely to an incorrect diagnosis. The second case is that of a young man thirty years of age whom I examined recently. At sixteen years of age this patient was told he had "leakage of the heart" and that he must not take gymnasium work, must not do any kind of strenuous exercise, etc. The boy was profoundly disturbed by this information. He began to give up his friends, he kept to himself and became quite inactive. He stated that he was in constant fear of sudden death and had planned his life with the expectation that he did not have long to live. When he finally entered the University, in spite of reassurance that his heart was normal, he refused to enter any type of athletics and took courses which would not be a strain on his supposed diseased heart. Since graduating from the University he has not married because of the persistent fear of early death. Although he had been informed by several physicians that his heart was quite all right

he reported fourteen years after the original mistaken diagnosis, still complaining of heart trouble. Once a diagnosis of heart disease is made it seems almost impossible to convince the patient that his heart is, in fact, not diseased. These examples are only two of many which are constantly observed. It is not uncommon to find that some doctor had prescribed tincture of digitalis when the patient had no cardiac disease. Many children with normal hearts ask to be excused from gymnasium because of heart disease and present letters from their doctors to the effect that they have serious cardiac disease.

The diagnosis of heart disease in children is relatively simple. There are really only two types of lesions which need be considered, rheumatic valvular disease, which accounts for 90 per cent of heart disease in children and young adults and congenital lesions. Concerning the diagnosis of rheumatic heart disease I should like to point out the importance of a good history. Given a child suspected of having valvular heart disease, one can guess that he has no organic cardiac disease if no history of juvenile rheumatism is obtained and the guess will be correct nine times out of ten. Even if rheumatic heart disease is present, it is not necessary to give the patient digitalis or restrict his activities in any way unless there is evidence of decompensation. Children with rheumatic cardiac disease get into difficulty not because of overactivity but rather because of infection. A sore throat, an upper respiratory infection or any other type of infectious process reactivates a smoldering rheumatic disease and more and more heart involvement results. The diagnosis of heart disease is a serious matter and great caution should be exercised before such a diagnosis is made.

Nature of Onset

Several investigators have pointed out the important fact that a large percentage of children who develop rheumatic fever give a history of an upper respiratory infection a week or ten days before the onset of the rheumatic process. The usual story is that a child develops a sore throat or cold and may be absent from school a few days, then returns to school apparently well when a sudden involvement of the joints occurs and the child is thrown into an acute attack of rheumatic fever. This quiescent period between the onset of the upper respiratory infec-

tion and the onset of rheumatic fever is considered as the period of developing allergy. When the child becomes sufficiently sensitized to the infection in his throat or bronchi he breaks out rather suddenly and acutely with rheumatic fever. Our experience leads me to concur in this general idea. However, I have noted that any infectious process may act as the sensitizing agent, not alone the upper respiratory infection, and a good many children develop rheumatism gradually with no prodromal infection. During this past year careful histories have been obtained from the parents of our patients in regard to the exact nature of the onset of the attack of rheumatism. These patients are for the most part young children who had recently recovered from an attack of rheumatism and in whom it was possible to obtain a correct detailed history.

TABLE II. TYPES OF ONSET OF JUVENILE RHEUMATISM

Onset preceded by:	Number	Percentage
Cold.....	27	13.5
Sore throat.....	9	4.5
Pneumonia.....	4	2.0
Measles.....	2	1.0
Scarlet Fever.....	12	5.9
Chorea.....	20	9.9
Other.....	9	4.5
Gradual Onset.....	90	44.8
Not obtained.....	28	13.9
Total.....	201	100

As Table II shows, of the 201 children with rheumatic disease, twenty-seven, or 13.5 per cent, had a cold a few days before the onset of rheumatic fever, nine, or 4.5 per cent had a sore throat and four, or 2.0 per cent, suffered an attack of rheumatism during convalescence from pneumonia and two, or 1.0 per cent, following measles. Twelve children, or 5.9 per cent, developed rheumatism during scarlet-fever. Nine children, or 4.5 per cent, had various types of onset. One child developed rheumatic fever a few days after an accident, two had an abscessed ear shortly before the onset, two had infected fingers a week or ten days before the rheumatism began. Twenty children, or 9.9 per cent, started their rheumatic disease with chorea. In ninety, or 44.8 per cent of the patients, the onset was gradual with no history of any preceding sensi-

tizing infection. These patients gave a history of joint pains for several months until the joints, in many instances, gradually became swollen and hot and the child finally was forced to go to bed. In twenty-eight, or 13.9 per cent, of the patients the history was not obtained. A study of the histories of onset of rheumatic infection in these children shows that a fair number of them develop their rheumatism following an upper respiratory infection but that any type of infection or shock may act as the sensitizing factor in a susceptible child and that a gradual onset with no preceding infection is the most common type.

The knowledge of the prodromal infection in rheumatic fever is important from a therapeutic standpoint. In observing our patients at Dowling School we have learned to keep them in bed from ten days to two weeks after each cold or sore throat or any other infectious process. Such conservative treatment, I believe, has prevented new attacks of rheumatic fever in many instances.

Signs of Activity

Rheumatic infection in children is a long continued low grade infection which can be compared to tuberculosis or syphilis. A single attack seems only to sensitize children to frequent recurrences. These rheumatic children often return to school showing much evidence of persisting infection. Not uncommonly, I have seen them in school with one or more joints swollen and tender. They often run a fever up to 100° and over for months and years. They do not recover between the acute flare-ups of rheumatic disease but in most cases continue to carry this smoldering infection which gradually produces more and more crippling of the heart. This process continues even while the children are attending school and are apparently well. However, if one is on the lookout for certain clinical signs children with this persistent infection can be diagnosed. They are usually underweight, they have a pallor, they look feverish, they commonly complain of unexplained abdominal pain, vomit easily and often have severe idiopathic nosebleeds. We have learned that frequent nosebleeds in rheumatic children is always a sign of continued activity. These attacks of epistaxis are prone to be so severe that they are difficult to stop. In the past year it has been necessary to hospitalize two of my rheumatic patients because

of alarming nosebleeds. It has long been known that nosebleeds are common in acute rheumatic fever but only in the last few years have we learned that they occur frequently in ambulatory rheumatic children.

Non-rheumatic "Growing-pains" and Joint-pains of Sub-acute Rheumatic Fever

Early in my experience at the Clinic all children complaining of leg pains were considered as rheumatic patients. By following a large number of them over a period of years I have learned that by far the greater number of such children are not suffering from rheumatic infection. It has been possible to make a clinical differentiation between the much larger group of children with "growing-pains" only and that group who have actual joint disturbances which, while it does not make it necessary for them to go to bed are, nevertheless, suffering from subacute rheumatic fever. This differentiation was made possible by contrasting careful histories obtained from the children with "growing-pains" and from their parents with the histories obtained from children who had already had a first attack of rheumatic fever or chorea and were now complaining of joint pains. Children with "growing-pains" complain of pain in the muscles of the thighs and legs, they never limp because of this pain, they have no fever, their pain most commonly comes on a few hours after they have gone to bed. This pain may be very severe and cause the child to cry out at night and make it necessary for the parent to massage the painful extremity or apply heat. On awakening in the morning they are entirely free from pain and have no stiffness or difficulty in walking. On the other hand children with pain in the extremities due to rheumatic infection have pain in the joints. On inquiry, a child with growing-pains will be very vague as to the location of his pain, he will usually run his hand over the entire thigh or leg when asked to point out the exact site of his pain while a child with rheumatic infection will invariably point directly to his knee, ankle, or hip joint. Children with joint pains due to rheumatism are often found to have a fever of low-grade, they commonly limp because of the pain, they complain mostly on attempting to walk or move, the joints on careful examination may be found to be slightly swollen, the painful joint

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TABLE III. DIFFERENCES BETWEEN NON-RHEUMATIC "GROWING-PAINS" AND JOINT PAINS OF SUB-ACUTE RHEUMATIC FEVER

	Non-rheumatic "growing-pains"	Joint pains of sub-acute rheumatic fever
Time of pain	Soon after going to bed. Pain gone in morning. No pain on motion.	Worse on arising. Exaggerated on motion. Difficulty in walking, may cause limp. Pain present during most of day, disappears on getting warm in bed.
Location of pain	In muscles of thighs and legs. Child vague in pointing out site of pain.	In joints themselves. Child points directly to knees or ankles. Often complains of pain in joints of upper extremities also.
General health	Usually good	Usually poor
Other signs of rheumatic activity	Usually none	Common, may have frequent nose-bleeds, unexplained fever, pallor, abdominal cramps, undernourishment. Evidence of carditis.
Objective findings in joints	None	Often joints are slightly swollen and hot.
Family history of juvenile rheumatism	Uncommon	Very common

may be somewhat warmer than the non-affected one. They are relieved of pain on getting warm in bed and rarely complain during the night. On arising in the morning they complain of stiffness in the joints and are unable to walk comfortably for an hour or two. By careful inquiry and examination it is possible to differentiate clinically between the much larger group of children with pains in the extremities of undetermined non-rheumatic origin from the smaller group who have actual subacute rheumatic fever and are in constant danger of developing cardiac involvement (Table III).

Expectancy of Recurrences

In order to determine whether or not any specific treatment is effective in such a long continued infectious process as juvenile rheumatism it is necessary to know first what may be expected in a group of untreated cases followed over a number of years. For this reason the normal expectancy of recurrences in childhood rheumatism has been studied. It will be noted in Table IV that of 342 cases studied over a varying number of years 178, or 52.1 per cent, of the patients had only the one attack so that more than one-half of them gave no history of recurrences. It is true that some of this group will eventually recur if followed over a longer period of time. Table IV does, however, show that of the 164 children who did give a history of recurrences forty-four, or 26.8 per cent, recurred during the first year after the primary attack, forty-

TABLE IV. INCIDENCE OF RECURRENCES IN JUVENILE RHEUMATISM

Total number of rheumatic children examined.....	342
Children with one attack only.....	178 (52.1 per cent)
Children with recurrent attacks.....	164 (47.9 per cent)

Recurrences within	Number	Per cent	Total	Per cent
1 year.....	44	26.8	44	26.8
2 years.....	44	26.8	88	53.6
3 years.....	28	17.1	116	70.7
4 years.....	20	12.2	136	82.9
5 years.....	5	3.1	141	86.0
6 years.....	8	4.9	149	90.0
7 years.....	4	2.4	153	93.3
8 years.....	5	3.1	158	96.4
9 years or more	6	3.6	164	100.0

four, or 26.8 per cent, recurred during the second year, so that eighty-eight, or 53.6 per cent, had had secondary attacks at the end of the second year. Twenty-eight, or 17.1 per cent, recurred during the third year so that 116, or 70.7 per cent, had relapsed at the end of three years. At the end of four years 136, or 82.9 per cent, had suffered recurrences, twenty, or 12.2 per cent, of the children having had secondary attacks during the fourth year after the initial infection. Recurrences continued as the children were observed from year to year so that at the end of nine years practically 100 per cent of the 164 patients

JUVENILE RHEUMATISM—SHAPIRO

had one or more relapses. I should like to point out as a result of this study that it is necessary to follow a group of rheumatic children from

have made a spot-map, Figure 3, depicting each attack in the 164 patients who gave a history of recurrences. It will be noted, for instance, that

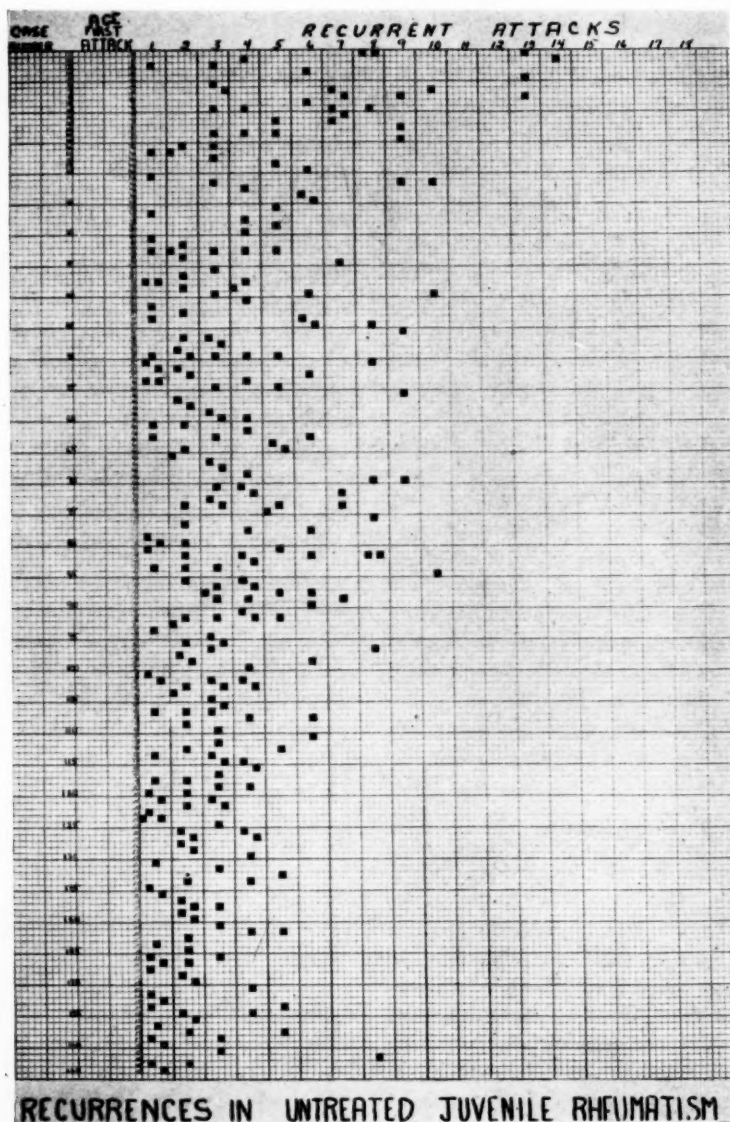


Fig. 3.

four to five years after the onset of any specific treatment before definite conclusions as to the value of such treatment can be drawn.

To point out more clearly the long continued nature of childhood rheumatism and the number of years that must elapse before one can say that the disease has become quiescent or cured, I

the first child had her first attack at one year of age, was free from manifest rheumatism for eight years when she had two attacks during one year. She was then free from rheumatism until her thirteenth year, when she had her fourth attack. The second case, a boy, also had his first attack during the first year of life, was free from

symptoms for the next three years, had a second attack in his fourth year, was apparently well for the next ten years only to have a recurrence again during his fourteenth year. In Case 7 the first attack occurred in the second year, with recurrences three, seven, and ten years later. The first episode in Case 33 occurred at five years of age and then recurred each year for the next five years. It is interesting to note that children may be free of rheumatism for many years after the first attack only to have a secondary attack years later as, for instance, in Case 56 where the initial rheumatic infection came at six years of age and there was no further rheumatic disease until ten years had elapsed.

A study of these data indicates that with no specific treatment a good number of rheumatic children have but a single attack and never have any further trouble but that the majority have repeated attacks over many years, and that freedom from rheumatism even ten years after an initial attack is not absolute proof that the disease is arrested.

Summary and Conclusions

1. The peak of incidence of rheumatic disease in children in Minneapolis is between five and six years of age. This is somewhat younger than the incidence presented by various clinics in this country and abroad.

2. The seasonal incidence in this part of the

United States is similar to the seasonal variation in other parts of the world.

3. The family incidence among families of rheumatic children is 46.7 per cent; three times as great as among families of a control group of non-rheumatic children.

4. A considerable number of children develop rheumatic disease soon after an acute upper respiratory infection but the great majority of them develop the disease gradually with no preceding infection.

5. Children with subacute rheumatic disease who are apparently well and attending school present symptoms which are characteristic of the disease. Recognition of these symptoms makes an early diagnosis possible.

6. The great majority of children who complain of leg-pains are not suffering from rheumatism. A clinical differentiation is presented which makes a correct diagnosis possible.

7. The normal expectancy of recurrences in a group of rheumatic children treated non-specifically is presented. These data are to be used as a control in determining the efficacy of any specific treatment.

8. A spot-map indicating all the recurrent attacks of rheumatic disease among 164 patients followed over a number of years is presented. This chart demonstrates the marked chronicity of juvenile rheumatism.

MUMPS MENINGO-ENCEPHALITIS*

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IN the past eighteen months, we have observed nine cases of mumps meningo-encephalitis, an unusually striking incidence when contrasted to the occasional isolated case observed in the prior two decades. This relatively high incidence suggested the possibility that many cases may be unrecognized; further, the increase also of cases of epidemic encephalitis, during this period, suggests some possible causal relationship.

Mumps is the earliest historically recognized contagious disease. Hippocrates (460-370 B. C.)

recorded his accurate observations of an epidemic that occurred in Thasos. He further described the orchitis that sometimes occurs. Subsequent observers recorded their experience with mumps, and throughout, even as today, this illness has been considered a benign and innocuous ailment, and almost no serious thought has been given to the relative frequency or severity of its so-called complications. True, in the pre-adolescent age, complications are infrequent, whereas in the post pubertal period, even since antiquity, medical writers have been cognizant of the frequency of orchitis, oöphoritis, mastitis

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and pancreatitis, and, save for pancreatitis, have considered these complications to be harmless or at most, temporary uncomfortable disturbances. Other complications are occasionally mentioned, as, otitis, labyrinthitis, bronchitis, pneumonia, dacryocystitis, arthritis, laryngitis, nephritis, et cetera, but generally these are the usual secondary, non-specific conditions that may accompany any infectious disease.

The group with which we are particularly interested here are the presumably rare neurological complications as meningitis, encephalitis, meningo-encephalitis, neuritis, et cetera. A review of the literature impresses one that these complications occur only in some of the epidemics of parotitis, and in these in varying degrees of severity, whereas other epidemics are entirely benign in all their manifestations. The first record of mumps meningitis was made by Hamilton,⁶ who reported to the Edinburgh Medical Society, in 1758, a case of fatal meningitis complicating mumps in a man of twenty-two years. French, in 1812, and Malshioche, in 1867, described this condition. Gailhard, in 1877, reported six cases. Gunderson⁴ refers to presumptive cases of mumps meningo-encephalitis described in Norway by Skjelderup and Conradi, in 1864, Ibbestad, in 1875, and by Kolbjörnsen, in 1890. No complete summary of the literature has been made since those by Acker,¹ in 1913, who collected 150 cases and that by Casparis,² in 1919, but, in all perhaps no more than 250 cases have been reported. However, since undoubtedly many cases have failed recognition and others have not been reported, this number gives no true index of these neurological complications.

In an endeavor to evaluate the comparative incidence of neurological disturbances to the total number of cases in a given mumps epidemic area, we find the literature misleading. Thus, de Massary, E. Tockman, and Lues⁹ report six cases of mumps meningo-encephalitis in 653 hospitalized mumps patients; Haden⁵—nine cases in 840 mumps patients; and Wesselhoeft¹³—two cases in 824 patients admitted to the Haynes Memorial Hospital. However, all these men have no index of the total number of cases of parotitis of which these neurological disturbances are a manifestation, since so many cases of mumps are never seen or reported. Thus, their conclusions of incidence are obviously in-

accurate. Larkin,⁷ in 1919, reported two cases in 2,400 cases of mumps at a training camp, which gives a more accurate index of neurological complications in adults during this particular epidemic. Undoubtedly the most valuable statistics might be compiled from incidence records in orphanages over a long period of years, but we were unable to find any such reports in the literature.

The types of neurological complications are manifold but are commonly designated as meningitis, encephalitis, meningo-encephalitis, neuritis, and myelitis. The cases we are reporting seem best described as meningo-encephalitis. Although meningeal or encephalitic symptoms may variably predominate, in general it would appear to be clinically neither advantageous, nor at times possible to differentiate the essential localization. Suffice it to suggest that in our cases and in the large majority of reported cases, the symptoms and findings indicate a mild to severe meningo-encephalitic involvement.

The etiology, because of the association with mumps, would appear to be due to the mumps virus or to a toxin liberated by the virus. However, indubitable experimental evidence has not yet been produced. True, Wollstein¹⁴ made intrathecal injections in cats of the pooled, filtered, mouth washings of mumps patients, producing symptoms of meningitis, and Gordon,³ in 1913, produced encephalitis in monkeys by intraspinal injections of mumps mouth washing filtrates, but these experiments do not prove the presence of the virus in the spinal fluid in cases of human mumps meningo-encephalitis. McKaig and Woltman⁸ report a case of transverse myelitis complicating mumps from which cultures taken from Steno's duct and from the naso-pharynx were injected by Rosenow into rabbits with resultant paralysis in eight hours in one case. This experiment would suggest a neurotropic type of mumps virus in the spinal fluid. However clinical experience would seem to justify the opinion that the meningo-encephalitis is due to the mumps virus per se, the occurrence of neurological symptoms before the glandular localization of the virus in some cases would tend to strongly negate the virus toxin theory.

The pathological status of mumps meningo-encephalitis is not clearly or thoroughly defined since necropsy reports are rare. Larkin⁷ reports one case with congestion of the pia arachnoid.

and patchy infiltration along the cerebral blood vessels. Microscopically the meninges showed a lymphocytic infiltration. Four cases reported by Gordon,³ which we believe are cases of mumps meningo-encephalitis without clinical parotitis, showed congestion of the meninges, flattening of the sulci from pressure, and lymphocytic infiltration of the pia arachnoid. In none of the reported cases were cord hemorrhages, as seen in poliomyelitis, observed.

The symptomatology of mumps meningitis is not clear cut, although our cases maintain a rather distinct similarity, probably because they all occurred in about the same epidemic period. Males are attacked more than females—in our series a ratio of 67 to 33 per cent. No age group susceptible to mumps seems immune.

The occurrence of the meningo-encephalitis in relation to the onset of the parotitis is variable. Undoubtedly the majority occur after the onset of the parotitis—in our series in from one to ten days. In others the meningo-encephalitis may occur concomitantly with the appearance of the mumps as did one of our cases. Lastly the neurological manifestations may precede the parotitis by several days as occurred in cases reported by Casparis,² Walker,¹¹ Weissenbach,¹² and Taillens.¹⁰ Finally there is a group of cases in which the meningo-encephalitis would appear to be of undoubted mumps origin by virtue of epidemiological contact, but in which the parotitis never occurs, just as mumps orchitis without parotitis is occasionally observed. Thus, Case 7 in our series, had so slight a parotid thickening that in the absence of other cases of mumps in the family, it might have been overlooked. The four cases reported by Gordon³ seem also to fall into this group.

The onset of meningitis is rather sudden; the initial symptom is almost invariably a severe headache, partial or generalized. Occasionally convulsions presage the onset. Shortly projectile vomiting occurs. The temperature varies from 100° to as high as 105°. Approximately half the patients are drowsy, the rest showing variable degrees of irritability to delirium, at times associated with spells of drowsiness. Hiccoughs, paresthesias, diplopia, and other signs of local irritation may occur.

The examination will almost invariably reveal neck rigidity and a positive Kernig. The reflexes are more often a little hyperactive rather than

decreased. Tache cerebrale is occasionally present. Localizing signs or isolated reflex changes are rather infrequent.

On spinal puncture there is an increased fluid pressure. The fluid is much like that of the other encephalitides or of tuberculous meningitis. The cell count may vary from 20 to 2,000, although it is usually 100 to 300 cells per cubic millimeter. The cells are predominantly lymphocytes; globulin is absent or, if present, only in traces. Smears and cultures are negative. There is often a slight increase of sugar and of chloride content of the fluid.

The course persists from five to fourteen days and is usually followed by complete recovery. In our series, all recovered, with no sequelae being discovered as yet, the observation period now being from three to eighteen months. In some epidemics, cases of increased severity, with more or less permanent hemiplegia, monoplegia, deafness or ocular paresis may occur, but these are in the minority.

In the treatment, spinal puncture and drainage combined with the ordinary symptomatic procedures seem to be all that is necessary.

The problem of diagnosis rests essentially in the appreciation that neurological complications are not rare. With this premise, diagnosis becomes relatively simple. True, there are no characteristic or pathognomonic signs to differentiate from early tuberculous meningitis, other types of encephalitis and even poliomyelitis, the identification depending on the associated mumps or in its absence, by the presence of a mumps epidemic or contact. As succinctly stated by Wesselhoeft¹³ "The circumstantial evidence is probably the outstanding aid in diagnosis."

In our experience, an outstanding point of diagnostic value is the presence of relatively mild neurological symptoms in conjunction with a high cell count and negative Nonne in the spinal fluid.

Tuberculous meningitis usually develops more slowly, early has a cerebral cry, and the clinical symptoms when developed are more severe. The spinal fluid shows a pedicle formation, which we have never observed in mumps meningitis. Further, the Nonne is usually positive, the sugar decreased, and if the organism can be found, the diagnosis becomes obvious.

Poliomyelitis shows many similarities, but an early paralysis or absent reflexes commonly de-

velops. The spinal fluid cell count is much as that in mumps meningo-encephalitis but early is made up largely of neutrophils. The Nonne is commonly positive in poliomyelitis.

Septic or epidemic meningitis results in a much more marked neck rigidity, frequently with severe opisthotonos. The early purulent spinal fluid with demonstrable organisms readily differentiates the two conditions.

Obviously other types of encephalitis can only be accurately differentiated by a recognition of the etiological illness.

Discussion

Our primary purpose in reporting these nine cases was to suggest the relative frequency of neurological complications in mumps. The increasing prevalence of encephalitis of all types in the past fifteen or twenty years suggests a number of problems of interest. Is this increase a phase in the life cycle of a disease present for centuries with waves of epidemics at relatively long intervals? An analogy is found in the life cycle of our more common infectious diseases, with epidemic waves every five to twenty years. The encephalitis epidemics differ in being much more infrequent.

Twenty years ago we began to observe increasing cases of epidemic encephalitis. Outbreaks occurred at intervals and in scattered parts of the world. From a review of reports it is observed that the course, symptomatology, prognosis, and the occurrence of sequelae or the production of a chronic stage, varied with each particular epidemic area and period. This would indicate that encephalitis may be due to a number of different organisms, alike chiefly in their predilection for the nervous system.

During this same two decades, we have also observed an increase of encephalitis following measles, vaccination, mumps, and other infectious diseases. The etiology remains unanswered, but several probabilities are suggested. First, are these cases due to a neurotropic change in the life cycle of the virus of measles, vaccinia, mumps, et cetera, as was first suggested by Gunderson,⁴ in 1927? Second (and more probable) does the initial infectious disease, by lowered resistance perhaps, either activate or prepare a portal of entry for a quiescent encephalitis virus of which many of us are at present carriers? A similar condition, for in-

stance, is observed with the meningococcus, the diphtheria bacillus and the pneumococcus. Lastly, is the encephalitis in all cases caused by a symbiotic reaction of a common encephalitis virus of measles, mumps, vaccinia, and, in the case of epidemic encephalitis, with some as yet unidentified "grippal" or "flu" virus?

We do no more than suggest these possibilities, feeling that ultimately some causal relationship between the various encephalitides may be established.

Summary

1. A report of nine cases of mumps meningo-encephalitis is made. The clinical, physical, and spinal fluid findings are briefly discussed.

2. It is felt that the incidence of mumps meningo-encephalitis is increasing and it is our prime purpose to call attention to this complication to aid in its more frequent recognition.

3. The problem of diagnosis rests essentially on the knowledge that neurological complications do occur, and on the recognition of the related mumps, the circumstantial evidence of mumps contact or a prevalent mumps epidemic. To us the relatively mild symptoms in comparison with the high spinal fluid cell count is a valuable differential criterion.

4. In treatment, spinal drainage and symptomatic procedures are all that are indicated.

Report of Cases

Case 1.—J. B., a boy of six years, developed mumps on February 27, 1933. Two days later he complained severely of frontal headache, and vomited frequently. His temperature rose to 102° (rectal).

When seen on the following day his temperature was 102° (r.), and he was quite drowsy. Both parotids were enlarged and tender. Neck rigidity and a positive Kernig were present. The reflexes generally were hyperactive.

Spinal puncture revealed a clear fluid under increased pressure. The cell count was 80, of which 74 per cent were lymphocytes. Nonne negative. On the following day his temperature was normal and the symptoms were less intense. Within three days neck rigidity and Kernig disappeared. Recovery was complete with no sequelae. This represents a milder type case with rapid response to spinal drainage.

Case 2.—J. K., a boy of seven years, developed a mild parotitis on March 22, 1933, which cleared up after four days. Two days later he developed headache, malaise, and fever of 101°. Severe headache and vomiting persisted for two days, with a fever of 100-102°. Examination at this time showed marked neck rigidity and a positive Kernig. The child was irritable

but mentally clear. Tache cerebrale was strongly positive.

On spinal puncture, clear fluid spurted from the needle. Twenty-five c.c. of fluid were removed. The cell count was 980, 93 per cent being lymphocytes. Mild fever, moderate neck rigidity, and spinal fluid cell count of 150 to 400 on daily puncture persisted for five days. Recovery was then complete with no sequelae.

Case 3.—P. E., a boy of thirteen years, developed a right parotitis on May 9, 1933. Six days later he developed a severe frontal headache, nausea, vomiting, and a fever of 101°. These symptoms persisted for five days before the child was seen for the first time. At this time his temperature was 99°, Kernig positive, neck rigid and there was a strongly positive Tache. Spinal puncture revealed only slightly increased pressure. The fluid was clear, the cell count was 22 with 94 per cent lymphocytes. Nonne and smears were negative.

The headache and vomiting persisted and three days later spinal puncture showed little change from the prior examination. Two days following this puncture, his examination was negative. Recovery was complete with no sequelae.

Case 4.—D. G., a boy of fourteen years, developed a bilateral parotitis on July 3, 1933. Ten days after the onset and two days after the parotid swelling had entirely subsided, he complained of frontal headache and vomited several times. The following day his temperature rose to 101°.

Examination at this time revealed moderate neck rigidity and a slightly positive Kernig. Abdominal reflexes were absent. A faint Tache was noted.

Spinal puncture revealed a clear fluid under slight increase of pressure. The cell count was 182, of which 88 per cent were lymphocytes. The globulin tests were negative. The symptoms subsided thirty-six hours after the spinal drainage and recovery was complete without any sequelae.

Case 5.—D. E., a boy seven years of age, developed a right sided parotitis December 12, 1933, with a fever of 100 to 101°. On the third day the parotid swelling began to recede and the child felt quite well.

On the next morning the patient vomited three times. Following this he complained of constant severe generalized headache and also of abdominal pain. His temperature rose to 102°. The next morning the headache was still present and the child again vomited. When examined there was found to a slight neck rigidity and slight Kernig. Only a trace of parotid swelling was present. His temperature was 102°.

Spinal puncture was performed, 14 c.c. being removed under considerable pressure. The cell count was 142, of which 89 per cent were lymphocytes. The Nonne was negative.

Following the puncture the temperature dropped to 100°, the child being much brighter and much more comfortable. On the following day the headache and vomiting had entirely subsided, although the temperature persisted between 99 and 100° and a slight neck rigidity was still present. The day following this the temperature was normal and all symptoms had subsided. No sequelae were observed.

Case 6.—R. M., a girl of twelve years, first developed a bilateral parotitis on February 11, 1934. Four days later the swelling began to recede. On March 17, 1934, or six days after the onset of the mumps, the child began to have severe hiccuping. She later complained of headache which became intense on the following day and was associated with vomiting and a fever of 100°. The following day the fever was up to 102° and headache and vomiting were still present.

Examination at this time revealed a moderate neck rigidity and a positive Kernig reaction. Reflexes were otherwise negative. Spinal puncture showed a pressure of 12 m.m. Hg. The fluid was clear, with a cell count of 460, 98 per cent lymphocytes. Nonne, pedicle formation, and smears were all negative.

On the following day the symptoms were less intense and two days later the child apparently completely recovered. No sequelae were observed.

Case 7.—W. M., aged eight, a brother of R. M., became ill on March 24, six weeks after his sister first developed parotitis. He complained of headache and was quite restless. When seen on the following day, he had a temperature of 105° (r.), marked neck rigidity and positive Kernig. The facies were of a somewhat stuporous type, but the sensorium was entirely clear. The eye reflexes and movements were normal, and the other reflexes were normal. There was just a trace of fullness over the right parotid area and no history of any prior parotid swelling. However, there were four other children in the family ill at the same time with epidemic parotitis. Although the child never showed any more than this trace of parotid swelling, the history, findings, and course were unquestionably those of mumps meningitis.

Spinal puncture was performed when the child was seen; the pressure was very markedly increased, 25 c.c. of fluid being removed. The cell count was 156 with 86 per cent lymphocytes.

The following day the temperature varied from 101 to 105°, but the child appeared a little more comfortable. The neck rigidity and Kernig were still marked.

On the next day the temperature again rose to 105° (r.). Spinal puncture showed only a slightly increased pressure with a fluid cell count of 140. At this time there was still a marked neck rigidity and a positive Kernig.

During the next five days the temperature reached a high point of 103, 103.4, 101.5 and 100° (r.), gradually subsiding. The headache ceased on the fifth day of the illness, and Kernig and neck rigidity cleared on the seventh day.

On April 1, 1934, eight days after the onset, the symptoms had entirely disappeared, and neurological findings became normal.

Case 8.—B. K., a twelve year old girl, became ill on April 30, 1934, with painful swallowing and slight swelling at the angles of the jaws. The next day she began to complain of headache and vomited. This persisted and on the following day she was first seen, with severe headache, vomiting and pain in the right upper quadrant. Neck rigidity was present, and a positive Kernig. There was a point of focal tenderness

over the pancreas with slight rigidity. Temperature was 102.2°. Spinal puncture showed an increased pressure with cell count of 114 (95 per cent lymphocytes). The child was more comfortable following the puncture but the next day the fever ranged from 101 to 103°. On the day following, spinal puncture still showed increased pressure with a cell count of 96. Following this puncture the headache subsided but the neck rigidity and Kernig persisted for three more days. The temperature remained between 99 and 101° that and the following night, after which it was entirely normal. The child recovered without any residue.

Case 9.—I. F., an eight year old girl, became ill with an epidemic parotitis July 22. Five days later she developed severe headache and persistent hiccoughs. The following day headache was intense and child vomited several times. Temperature was 102.5°. Spinal puncture showed increased fluid pressure and a cell count of 124, chiefly lymphocytes. The temperature subsided after this puncture, but headache persisted, as did the neck rigidity. A second spinal puncture showed practically the same findings. Following this all findings and symptoms rapidly subsided with complete recovery and no sequelæ.

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THE EFFECTS OF EARLY POSTOPERATIVE FEEDING*

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THE early restoration of normal function is the aim of all our therapy. Surgery is mechanical therapy and in itself produces a certain amount of damage, but is chosen as a means to an end, the lesser of two evils. The early return of function is in itself the best means of restoring the health of any organ. Witness, for example, the early moving of the joints in cases of fracture and the resulting quicker healing and better function as contrasted with the results of former treatment by absolute immobilization.

A thorough history, a painstaking physical examination and intelligent sympathetic postoperative care are as important as the operation

itself. It is taken for granted that the operation is well done. The patient is in no position to judge the history or the physical examination and certainly not the operation itself, but he can and does appreciate his postoperative care. Incidentally, the doctor is judged more by the postoperative care he gives his patients than by any other one factor in his treatment. An operation is an event of importance in any one's life. As such it is the subject of much interested discussion whenever two or more people get together who have undergone this ordeal.

Dr. Alvarez in his interesting and enlightening book, "The Mechanics of the Digestive Tract," brings out the principle of intestinal gradients. He says that normally the intestinal

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tract is most irritable at its stomach end. Hence, stimuli arising from the presence of contained food tend to cause movements which carry the intestinal contents away from the more irritable to the less irritable parts. This is what maintains the normal direction of peristalsis. But he has also shown that irritation of any part raises the irritability of that part and this will tend to stop or reverse peristalsis. Waves away from the point of greatest irritability occur.

Postoperatively the most distressing symptoms are, from the patient's point of view, nausea, gas-pains and soreness of the incision. If these conditions could be shortened, relieved or prevented, a great deal could be accomplished toward a happier convalescence.

Now it occurred to me that if the irritation caused by operations in the abdomen or pelvis would cause an arrest or reversal of peristalsis from the strong stimulation applied below, that if sufficient stimulation from above could be applied, arrest or reversal of peristalsis would not occur, hence a relief from nausea and vomiting. What more physiological stimulation to peristalsis is there than that of food?

The question of safety in early postoperative feeding occurred. But we know that in an enclosed cavity containing fluids or gases pressure applied anywhere within that cavity is transmitted in all directions without diminution. Hence pressure within a bowel, which is in the peritoneal cavity, is different from that without only by the strength of the intestinal muscle. I have not found any definite reference to the amount of pressure an intestine can exert by its own contraction, but it certainly is not anywhere near the pressure required to burst a bowel³ and suture lines will hold more than that. The average pressure required to burst a bowel is 6.26 pounds per square inch and the lowest recorded is 2 pounds. Furthermore clean incisions into peritoneum heal very rapidly and plain catgut is not absorbed for about ninety-six hours.⁵

I had long given patients water by mouth immediately following operation, without any untoward effect even in stomach cases. This I found later was in agreement with such an eminent authority as Lord Moynihan,⁴ who says, "There is no harm in giving fluids freely. If a patient can vomit without injury to the suture-line it is quite certain that fluids through an

anastomotic opening can do no harm." Furthermore he states: "Fluid taken by mouth has to pass to the large bowel to be absorbed. The intestine is kept active and this is entirely an advantage." Alvarez doubts this last statement and in a personal communication says that fluid can most certainly be absorbed in the small intestine.

I have found also that the discomfort following operation and the usual subsequent starvation induced much swallowing of air and suspected, as Alvarez² and Wangenstein⁶ have shown, that a great deal of air may be swallowed, as much as 500 c.c. at one time and 3,000 c.c. in twenty-four hours being not uncommon. This is one cause of flatulence, perhaps the main one.

Accordingly, before having all these facts proven I began giving patients water freely as soon as they asked for it and urged food upon them as soon as possible. The results were for the most part good. There was much less swallowing of air and consequently much less distention. Interestingly there also was a great deal less nausea, and peristalsis was soon established. This was so striking, as was the shortened hospital stay, that I decided to take 100 consecutive cases so treated to see if my impression was a fact.

Most operations today are performed in the abdomen and pelvis. So-called "clean cases" only are reported, as others are a special problem not to be considered here. For statistical purposes, herniae, requiring longer confinement, are also excluded. The cases mentioned in the following figures were not picked but were taken as they came and no attempt was made to classify them under separate headings, as cholecystectomy, appendectomy and so on.

One hundred cases so treated showed the following: Twenty-four ate on the day of operation; fifty on the first postoperative day; twenty-one on the second; four on the third; and one on the fourth post-operative day. Forty-eight did not complain of gas pains at all. Twenty-five had mild gas pains the first day only and twenty-one had mild gas pains the first and second post-operative days. Four had mild gas pains the first three postoperative days, while two had severe gas pains more than three days.

Age made no apparent difference. The youngest patient was six years of age, the oldest sev-

enty and the average age was 36.6 years. There were no postoperative herniae in this series.

TABLE I

Of those who ate on:	Sat up	Got up	Dismissed
Day of operation.....	3.2 days	3.7 days	6.0 days
1st postoperative day...	3.6 days	4.5 days	7.2 days
2nd postoperative day...	4.2 days	5.2 days	8.1 days
3rd postoperative day...	4.8 days	6.1 days	9.0 days
4th postoperative day...	5.0 days	7.0 days	10.0 days

In 100 consecutive cases treated in the old orthodox manner, they began eating on the third postoperative day, got out of bed on the seventh day and left the hospital on the tenth day on the average. In these cases much more frequent recourse had to be made to enemata, pituitrin and such for relief of gas and nausea.

It seemed that the discomfort in the wound itself was less marked and that patients also moved about more freely in the first series. Also in that series no emboli nor respiratory infection occurred. Of course so small a number is no criterion but isn't it possible that the lessened pressure below the diaphragm made some difference?

Of course the use of modern anesthetics such as novocain and ethylene made early eating possible. But the innate conservativeness of the medical profession often has delayed the adoption of new methods long after they are shown to be possible and feasible. I think on the whole this is a desirable attitude but some one must pioneer.

This technic of early postoperative feeding is to be followed further unless future experiences make it seem unwise. However, all the indications are for its continuance. In fact, the early recovery from the operation and the greater comfort the patients enjoy make their mental attitude so very favorable that much of the horror of surgery is removed. It is a part of our duty to relieve suffering and prolong life and if in a small way this contribution does either, I shall be satisfied.

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EDITORIAL

MINNESOTA MEDICINE

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BUSINESS MANAGER
J. R. BRUCE, Saint Paul

Volume 18 JUNE, 1935 Number 6

The State Meeting

The annual meeting of our State Medical Association is the outstanding yearly medical event in the State. Each year the meeting seems to be larger and better than the year before, and this year's meeting promises to be no exception. The combined meeting this year with the Medical Section of the American Association for the Advancement of Science will result in the largest attendance in history.

The scientific sessions of our Association will occupy three full days, June 24, 25 and 26, which will include some joint meetings with the American Association for the Advancement of Science. The latter association will continue its program Thursday at the Mayo Foundation in Rochester and Friday morning at the University, and our members are invited to attend these meetings.

Another outstanding innovation of this year's meeting will be the participation of some fourteen distinguished speakers from outside the state, two of them brought here by the American Association for the Advancement of Science and the remainder by the State Medical Association and the various societies of specialists in Minne-

apolis and the state at large. Participation in the program by Minnesota physicians will be limited to those conducting clinics Monday and Wednesday mornings and the numerous scientific demonstrations and exhibits each day from 10 to 11 A. M. and 2 to 3 P. M. The reception of this innovation by the members will probably determine the type of future programs.

Attention should be called to the series of six lectures on subjects of an economic nature to be delivered by Mr. Theodore Wiprud, Executive Secretary of the Medical Society of Milwaukee County, Wisconsin. These lectures were so well received at Marquette University that they have been incorporated in the Medical School curriculum. The two lectures to be given each day will be discussed by Dr. R. G. Leland, Director of the Bureau of Medical Economics of the American Medical Association.

In lighter vein will be the Hobby Show displaying the avocations of many of our members. Perhaps some of the rest of us without hobbies will be led to imitate these confrères. The golf tournament Wednesday afternoon will attract a full quota.

The Women's Auxiliary is printing its own program of the various social events being arranged for visitors by the Hennepin County Auxiliary. The wives of members will find they have not been forgotten.

The ladies as well as the men are expected to attend the annual banquet and the evening of entertainment being provided by our hosts, the Hennepin County members, on Tuesday evening.

In the program which appears in abbreviated form in this issue, the long list of Technical Exhibitors has necessarily been omitted. It is they who are so essential to the financial success of our convention and we bespeak for them the patronage of our members.

The annual convention promises to be outstanding. Never before has the Association offered such an array of medical celebrities, and each guest will be allowed the greater part of an hour to present his message. It behooves the members to take advantage of this unusual opportunity.

The Ramsey County Diamond Jubilee

Seventy-five years have passed since the founding of the Saint Paul Academy of Medicine and Surgery. On March 1, 1860, a group of physicians consisting of D. W. Hand, Alfred Wharton, T. R. Potts, Samuel Wiley, J. H. Stewart, F. R. Smith, J. A. Vervais, William H. Morton, E. Braun and Francis Regnier, all of Saint Paul, and J. H. Murphy of St. Anthony (now East Minneapolis and at that time located in Ramsey County) met in rooms above George Benz's saloon on Third Street and formed their society.

Dues of \$25.00 were paid by the members and the salary of the City Physician, the duties of which office were performed one month each year by each of the members of the society, was turned over to the society. A lot was purchased, a library started and a microscope procured. Then came the Civil War and after struggling through the trying times of the war period, the society was disbanded in 1866. This same nucleus of early practitioners, however, augmented by a few others, formed the Ramsey County Medical Society when it was founded February 14, 1870, as a component part of the Minnesota State Medical Association. This close connection between the Saint Paul Academy of Medicine and Surgery and the Ramsey County Medical Society was the excuse for the celebration of the seventy-fifth anniversary of the organization of the Saint Paul medical profession which took the form of a stag dinner staged at the Minnesota Club, May 18, 1935.

When our Historical Committee publishes the history of medicine in Minnesota it will be shown that medical societies existed in the state more than seventy-five years ago. An organization known as the Minnesota Medical Society was formed in 1853 and the Union Medical Society, composed of doctors in Minneapolis and St. Anthony, in 1855. While the lives of these two organizations were fleeting, the State Association dates its birth from 1853, when the Minnesota Medical Society was formed.

Much water has flowed over St. Anthony Falls since these beginnings of organized medicine in Minnesota, and during this period more progress has been made in the science of medicine than in all the years preceding. The article immediately following was written, on the occasion of the seventy-fifth celebration of the Ram-

sey County Medical Society, by Dr. William Davis, who has been practicing in Saint Paul since 1883. He knew many of the members of the early Minnesota medical societies and he speaks from personal knowledge of early medical practice in this community.

THE DIAMOND JUBILEE OF THE RAMSEY COUNTY MEDICAL SOCIETY

WILLIAM DAVIS, M.D.
SAINT PAUL

Before 1860 there had been no organization of doctors in this community, and when in that year it was decided to form a medical society only twelve men could be mustered for the purpose. They called the new society The Saint Paul Academy of Medicine and at once began to have meetings as regularly as possible. The next year came the war between the North and the South, and so many of its members entered the service of the government that the Academy languished, until in the year 1866 its regular meetings ceased, not to be resumed for four years when it was reorganized February 14, 1870, under the name of the Ramsey County Medical Society, an organization that flourishes today with a strong and active membership of more than three hundred.

The founders of the Academy all have passed away long since. They did good service for the city and county, one of their functions being to furnish a physician for the city. This they did by having each member take the service in turn. As Asiatic cholera was an almost annual visitor to Minnesota at that time, the care of the public health was of no small importance. Under the auspices of the Academy, courses of public lectures on sanitation were given for two winters. The lecturer was Dr. David Boswell Reed, who had taught this subject in the University of Edinburgh and had come to Saint Paul for the benefit of his health.

The census of 1870 gave Saint Paul a population of more than 20,000 and the new Society began with a charter membership of twenty-two. All of these men have died, the last one a year ago, but several of them practiced medicine long enough to be well remembered today, notably Drs. S. D. Flagg, C. E. Smith, J. H. Murphy and Alfred Wharton. The growth of the Society has been steady and there is a record of regular meetings up to the present day, a record to be proud of when the handicaps of its early years are considered.

When the writer joined the Society in 1883, Saint Paul would hardly have been recognizable by those who know it only as it is in 1935. To one coming from the older cities of the East, it looked particularly raw and crude. No street was paved; what sidewalks there were, were boards, often loose. In the wet weather of spring a sea of mud extended from walk to walk. In summer that mud became dust. The going was best in winter when a smooth coating of ice and packed snow made wonderful sleighing, which lasted so many

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days that up to 1900 even the fire apparatus was put on runners for at least part of the winter. These streets, when lighted at all, depended upon the feeble illumination of gas or oil lamps, reinforced at Bridge Square, Seven Corners, and the junction of the then Third Street and Summit Avenue by 100 foot masts surmounted by clusters of arc lights.

With many vacant lots intervening, the business streets showed a great variety of buildings, many of wood and occupied as residences, others built of brick or the local gray limestone, and rarely of ornamental sandstone. Few reached the height of four stories. The newest and most up to date office building was the Gilfillan "block," still standing on the southeast corner of Fourth and Jackson Streets. The principal hotels of that day have disappeared entirely. Only one bridge crossed the river, that at Wabasha Street, then constructed chiefly of wood. A forest of poles carrying overhead wires almost blocked the streets and sometimes hampered the firemen seriously. School buildings made no plan for cold weather ventilation and no provision for illuminating the desks properly. There were but two private hospitals: St. Joseph's, with only one of its present wings built, and St. Luke's, which was on Eighth Street and housed in a frame building that had but lately been a boarding house of unenviable repute. For a City Hospital there had just been acquired a private dwelling on the site of the present Ancker Hospital. There was no ambulance. Accident cases and the very sick were carried in the open police patrol wagon. While there were some women who made nursing a profession, the trained nurse as she exists today was unknown, and it was not until several years later that the first school for nurses was opened.

Local transportation was provided for by a few public hacks and by two short lines of one man horse-cars, or oftener mule cars, one line a few miles long on Seventh Street, the other pursuing a wandering route from Fourth and Wabasha Streets to the junction of Laurel and Dale. Between Saint Paul and Minneapolis trains ran on the steam railroads at half hourly intervals during the busy hours, less frequently at other times. Between the cities there were three lines of railroad, two over the Milwaukee (one via Fort Snelling) and one over the Manitoba, now the Great Northern.

To eastern eyes some of the manners and customs of Saint Paul fifty years ago were striking, to say the least. It was a surprise to find the numerous saloons and barrooms of the city visited freely and openly by the leading men, judges, lawyers, doctors, and business men. Among the customers might be found a policeman in uniform and that same policeman might be seen patrolling his beat under an open umbrella and smoking a cigar. Chewing tobacco was widely indulged in by all classes of society, as was shown not only by numerous brown stains on the sidewalks, but also by the imposing array of cuspidors in all public places, particularly noticeable in the court rooms, where these receptacles were liberally provided for and often used by the bench, the bar, the jury, the witnesses, as well

as by the spectators. In the bitter cold of winter women out of doors often were almost unrecognizable, their heads were so swathed in hoods, scarfs, and mufflers, to match which headgear they wore long dresses, numerous flannel petticoats, shoes laced or buttoned above the ankles and thick felt "Arctics." Warm clothing was indispensable where private vehicles were usually open ones and public vehicles made no provision against the cold except a thick layer of straw on the floor.

Fifty years ago but little had been accomplished in the way of the sanitation of the city. A part of the lower levels were supplied with water from Lake Phalen by a gravity system. In the same area there were sewers, but many of the abutting buildings were not connected. A considerable number of surface wells were in use, and outside the sewered streets cesspools and sometimes privy vaults were the only accommodations for drainage. Where there was no water laid, cisterns were depended upon or water was hauled in barrels. Many of the smaller shops threw their sweepings and refuse into the streets and sometimes slops would be emptied into the gutter. To try to keep dirt streets clean is discouraging anyway, and little effort was made in that line except just before elections.

Such was the environment of the Ramsey County Medical Society during its early years. These details are necessary to show how little there was to help and how much to hinder the proper care of the health of the community. The doctor of that day began his practice on foot; later, if he prospered, he acquired a horse with a buggy to drive in in the mild weather and a cutter when there was snow, with a buffalo robe to keep him from freezing. On long cold drives, for warmth he sometimes put a lighted lantern under the robe. Alighting from the vehicle to make a visit he anchored the horse with a strap and weight, blanketing the animal in very cold weather. The doctor's office was in a business building, frequently over a drug store, the druggist renting the whole building and subletting space to doctors. Such offices usually were heated by stoves and lighted by open gas jets or kerosene lamps. Few offices had attendants before the middle of the eighties, when the trained nurse began to appear. As the telephone came along the doctor was among the early subscribers, but even up to 1885 many offices were not connected with it. More often calls came in over the telephone of the druggist downstairs. Calls by telephone, however, were not numerous. The patient usually came directly to the office, and the caller at the house rang the doorbell, for the telephone was a luxury and not yet in general use. Some calls over the telephone, particularly at night, came from fire engine houses where the neighbors were allowed to use the telephone only to call a doctor.

Between 1880 and 1890 the population of the city increased more than threefold, from 41,000 in 1880 to 133,000 in 1890. The Society grew in full proportion to this growth but the attendance at the meetings left much to be desired. Having no rooms of its own, the

Society was obliged to meet around in the offices of its members, for the most part in small, dimly lighted, and generally unattractive surroundings. The doctor coming home tired to his evening meal can be drawn out to a society meeting only by a high sense of duty. Moreover the small attendance led to dull meetings. Napoleon said that an army travels on its stomach. It seems as though this were true of doctors also, and that they travel to society meetings on their stomachs, for when soon after 1890 the society meetings were preceded by a dinner the attendance jumped up amazingly, and later on, since it has had its own quarters, a library, and a laboratory, it has flourished like a green bay tree.

The last seventy-five years have seen greater permanent advance in the science of medicine than had been made in all the preceding ages. Some of the most devastating diseases have been wholly or largely suppressed. Even as late as 1884, the mayor of Saint Paul, the late C. D. O'Brien, addressed this Society on the need of making preparations for a threatened visit of cholera the next summer. It is necessary only to mention other great epidemic diseases that periodically brought death and destruction to all parts of the globe, but that are now well under control. Foremost among these were the plague, typhus, and yellow fever. In the subjugation of the last named disease an important part was played by the late Dr. Walter Reed, once a resident of Saint Paul and a member of this Society. As long as the misguided antivaccinationists can be kept from meddling, smallpox will not be dangerous. A sidelight upon what may happen to an unvaccinated community is shown in the records of the Ramsey County Medical Society for 1883, where there is published the report of one of its members, Dr. Burnham, who was sent to help handle an epidemic of smallpox in McConleyville, Wilkin County. He found a population strongly opposed to vaccination for the prevention of the disease and to fresh air and cleanliness for the care of the sick. By persuading the people to be vaccinated he got the disease under control, but not before there had been twenty-five cases with the enormous mortality of eighteen deaths, the cases all being of the virulent, confluent variety. Dr. Burnham makes this significant statement: "No person who could show the slightest scar (of vaccination) died of the disease."

The above list includes only leading epidemic diseases whose toll of deaths was enormous in past times. There are other important diseases in whose prevention and cure there have been great advances. The early members of the Ramsey County Medical Society were called upon to fight diseases that were chiefly seasonal. In summer there was cholera infantum, in the autumn typhoid fever, in cold weather pneumonia and diphtheria, while tuberculosis of the lungs prevailed the year round. The disease that led the death list was cholera infantum, a term that is found no longer in the International List of Causes of Death, the cases then reported under it being now included under the heading "Diarrhea and Enteritis," with a mortality that today is comparatively insignificant. In

the eighties, however, the diseases of this class caused more than twice as many deaths as the next on the list—pneumonia; third in the order of mortality came typhoid fever, followed by tuberculosis of the lungs and then diphtheria. In proportion to the population, puerperal fever had a great mortality, ten times that of today.

In surgery, progress has been really wonderful. Almost up to 1880 operations were limited chiefly to amputations and the removal of tumors on the surface of the body. Except to repair accidental injury it was almost criminal to open the abdomen, the skull, the chest or a joint. It is necessary only to hint at the contrast between that surgery and the surgery of today. Two members of the Society were pioneers in the performance of operations that are now common. The first operation on the gall bladder that is recorded in this country was reported to the Society in October, 1886, by Dr. Justus Ohage, still an honored member. A few years later another member, the late Dr. Shimonok, removed a diseased appendix in the interval between attacks. He knew of no previous similar operation.

To the late Dr. Edouard Boeckmann more than to any one man, the Society owes its present prosperity. Joining the Society in May, 1893, he announced at once that it was his ambition to see the Society meeting in its own rooms, publishing its own medical journal, and equipped with a library and a laboratory. These objects were accomplished so promptly that in 1899, when he read his address as retiring president, the Society had its own rooms, library, and laboratory and was publishing its own journal, *The Saint Paul Medical Journal*, whose successful career from 1899 to 1917 ended only when MINNESOTA MEDICINE began publication. There is a further word to be said about the laboratory. Dr. Boeckmann made to the Society a present of his own method of preparing catgut for surgical use. For more than thirty years the laboratory has carried on the manufacture of this catgut with great success, the product being universally recognized as of the highest excellence, its sale producing a large profit that is used chiefly for the maintenance of the library together with its much used reading room.

UROTEx

According to the formula on the label, Urotex consists of two tablets, A and B. Tablet A (gray) contains hexamethylenamine, ext. nux vomica, acid benzoic, and atropine sulphate. Tablet B (brown) contains ext. huchu, ext. corn silk, ext. triticum, pot. bicarbonate, sodium borate, caffeine and atropine sulphate. These formulas represent the shotgun type of proprietary sold to physicians in the period preceding 1906, except that the composition appears on the label. The product has not been submitted to the Council on Pharmacy and Chemistry for consideration. It goes without saying, however, that the Council would not approve such a product. (*Jour. A. M. A.*, February 17, 1934, p. 561.)

MINNESOTA MEDICINE

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
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County Society Plans

In token of the fact that the American Medical Association's House of Delegates was not called just to pass idle resolutions at its recent special session, a conference of representatives from every state for the purpose of making a practical study of plans for medical service controlled by county medical societies met in Chicago in May.

The House of Delegates, in its endorsement of the report of its Reference Committee, went on record as definitely favoring the development and institution of such plans—plans suited to individual community needs and eliminating the special features of the pre-payment insurance plans that met with the disapproval of the delegates.

Some very interesting tabulations of types of medical service now in operating with county medical society participation or control are available as a result of this meeting.

They provide an interesting answer to the familiar complaint that organized medicine just "sits back and does nothing"; that it "objects to all plans proposed for better distribution of medical care but it offers no plan of its own."

Many Experiments

Organized medicine is now participating in eight different types of experiments for better provision of medical and hospital care mostly for low income groups, industrial groups or the indigent.

These experiments are scattered from New York to California and in all of them the local County Medical Society coöperates in the control or officially associates itself in some fashion with the project.

Each one of these experiments differs widely from the other in the details of organization and sponsorship though many are of several years standing and have taken their places as essential community institutions.

Each one has been fitted into an especial need of the community and could not be transplanted to any other community.

It seems obvious, therefore, that the creation of one plan for distribution of medical services for the entire United States would be difficult, not to say impossible.

It is obvious, also, that organized medicine is not sitting back. It is making its answer to the problems presented by modern social and economic dislocations on many different fronts.

Practical Ways and Means

True, the attack has not been spectacular. It has not been prefaced by any great amount of expensive testimony of question accuracy to self-evident general truths: to wit, that many people do not receive all of the medical care that the idealist could wish; that today some communities and some classes need the aid of an organized scheme to assist in the proper distribution of medical service.

But while the professional idealists were making studies to establish these general truths, the doctors in many corners of the country were already considering practical ways and means to achieve practical results in improving specific conditions in their own communities.

The American Medical Association through its House of Delegates has publicly disapproved of any and all schemes that include compulsory contributory aspects. At the same time, it is now preparing to give every possible aid and encouragement to the local community projects sponsored and controlled by county medical societies.

Plans are Fluid

These are practical plans designed to meet immediate individual needs and requiring no new social legislation and no revolution in traditional American methods of medical practice to put them into effect.

In addition they are fluid; easily scrapped or

changed as experience may dictate abandonment or change.

If they do not work as they are, some modification of them undoubtedly will work. And in the meantime America is not irrevocably committed, as England is now committed, to the doubtful beneficences of an expensive system of health insurance.

Advice from Chicago

Practical advice came out of the Chicago conference on medical society plans.

Ambitious societies were counseled first to take no steps toward any experiment whatever without a thorough preliminary study of existing facilities and the need for improvement or change.

This study should be made by medical societies themselves, the bulletin on the subject cautions; previous studies by social workers should not be accepted.

Before any new machinery is created or any fundamental change made in the organization of medical services in any locality it is worth while to consider to what extent the situation may be met by adjustments of local fee schedules.

Could such adjustments include special fees for low-income classes with provision for determining economic status? Such graduated fee scales already exist in many states for the care of the indigent, for workmen's compensation service, and sometimes for other special classes.

About Existing Plans

The following main points should be answered in full before any plans are laid whatever.

1. What are the present methods used for providing medical care for the indigent? Is any existing plan capable of extension into a more general medical plan either in scope or in methods of operation?
2. What are the conditions of operation of hospital and clinic service? Is any plan of group hospitalization in existence and what are the relations to it of the County Medical Society?
3. What types of industrial practice exist in the community? Are they conducted according to the code of ethics?
4. Are there any appreciable sections of the population that are not now receiving medical service which they deserve?
5. What machinery is to be provided for determining the patient's ability to pay and for

collecting medical fees? Is there any system of collecting or financing medical fees through County Medical Society now in existence?

6. Is there a necessity for medical service for special groups, crippled children, cancer patients, the tuberculous, blind, deaf, etc.?

7. What activities in the way of preventive medicine (immunization, etc.) or for school health are now being conducted by the County Medical Society?

Must Suit Locality

All of these problems should be investigated. All will not be, of course, of equal importance in any one locality. It will not be generally advisable to attack all of them at once in any new plan for medical service.

It is advisable, however, to investigate them all and to keep in mind the possibility of later inclusion of several or all of these phases of medical practice in any plan that may be organized.

"One of the advantages of County Medical Society control, management and experience," counsels the Bureau, "is the possibility of suiting the experiment to the particular local problems and of altering the plan as conditions change or new problems arise. The impossibility of such flexibility is one of the great disadvantages of state and national compulsory legislation."

Practical suggestions as to organization of any contemplated services based upon results of the above study are appended and, no doubt, will be available from the American Medical Association to any County Medical Society that contemplates experimentation.

In Operation Now

Notable among the special plans already in operation in various parts of the country are the following:

New York County, N. Y.: A special low fee schedule has been agreed upon by medical society members to serve families of two with an income of \$1,400 and \$250 extra for each dependent or \$900 for single persons. The city is to be districted for the purpose. A list of the physicians is maintained at each district headquarters and consultations provided at low rates.

Post-Payment Plans

A post-payment plan for providing medical service is offered by the Central Clinic Commission of San Diego including the County

MEDICAL ECONOMICS

Medical Society, the Community Welfare Council, the County and City Health Departments, the School Health Department, Navy Relief and two hospitals. It is designed for the low wage group. The clinic service of the commission investigates, fixes fees and terms of payments and routes patients. It does not collect fees but less than one per cent have failed to pay.

* * *

A post-payment plan is also in successful operation in Alameda County (Oakland), California, in which the County Medical Society coöperates with the County Board of Supervisors. The social service department, financed by the Board of Supervisors, investigates cases, sets fees subject to the physicians' approval and routes to physicians.

* * *

Another successful post-payment plan is in operation for the second year by the Wayne County (Detroit) Medical Society of Michigan. Exclusive control rests with the medical society in this instance (see details printed in the February issue in these columns). It includes complete medical and hospital service. Fees are fixed by the social service department employed by the society and collection is controlled largely through coöperation with employers.

* * *

In Allen County (Fort Wayne), Indiana, the County Medical Society is attempting to develop a plan for the indigent and low income group on a similar basis with the physicians participating, paid on a unit basis and about a 50 per cent fee. The plan is sponsored by the Community Chest which investigates, recommends to physician and pays part of the fee.

* * *

Nassau County, New York (Long Island), has a tumor clinic, an orthopedic consultation service, and a "Public Health Hour," all of which are designed for the indigent and low income groups and all under the ultimate control of the County Medical Society, and the immediate control, respectively, of the American Society for the Control of Cancer, the state and county tuberculosis sanatorium, the Public General Hospital, 195 physicians and 10 hospitals.

It is now proposed to extend this service to general medical care for the indigent, low pay and regular pay patients. A social service department will investigate part pay and indigent

patients. Consultation privileges are to be available through the executive secretary of the society.

* * *

A post-payment plan is in operation in Washington, D. C., through a Central Admitting Bureau of the "Medical Dental Service Bureau," composed of directors of medical and dental societies. It is designed for low wage earners and fixes fees for them and assists in payments. In most respects this plan greatly resembles the Wayne County plan.

Washington Contracts

Pre-payment plans in Pierce and King Counties, Washington, are the outgrowth of medical services organized in lumbering days by the lumber companies and subsequently greatly abused by other private industrial concerns. These new plans are organized and controlled by the respective County Medical Societies.

In Pierce County the cost is defrayed on a pre-payment basis of \$1.00 and \$1.50 a month for complete medical and hospital service. There are 105 contracts and the physician is paid on the fee basis. The employee chooses him from a posted panel.

In King County (Seattle) the same service is provided on much the same basis. But the income is distributed on the unit system with the physician receiving 60 to 70 per cent of the fees. There are 20,000 industrial employees under contract.

* * *

A medical Service Bureau of Utah State Medical Society has been proposed for the purpose of making contracts with low income groups on a pre-payment basis. The plan has been adopted by the House of Delegates. No group hospitalization is contemplated at present.

* * *

The County Medical Society of Fulton County (Atlanta), Georgia, offers pre-payment medical care to families with monthly incomes of from \$120 to \$150 depending on the number of dependents. For single individuals the rate is \$95. This service includes complete home service but excludes hospital and nursing care with the exception of special rates for maternity work and tonsillectomies. The cost is \$1.50 a month for the first member of the family; \$1.00 for the

second and 50 to 75 cents for others with a \$1.00 enrollment fee.

Group Hospitalization

Group hospitalization plans are in operation with medical society endorsement in Cleveland, New York City, Washington, D. C., and St. Paul.

* * *

In Iowa three County Medical Societies in Black Hawk (Waterloo), Clinton and Johnson counties have contracts with county boards of supervisors to give full medical care to the indigent. In Black Hawk the medical society is paid a lump sum of \$3,500 a year which is used for general society work, dues, etc. The work is rotated and none goes to individual practitioners. The scheme has been in operation here for 25 years. In Clinton county work is rotated among member physicians. Overhead plus a sinking fund of \$50 a month is deducted and the physician gets a maximum of \$150 a month from remaining funds. Rates paid by the county supervisors are 50 per cent of regular fee schedule. In Johnson county the work is done largely through the University staff.

Indigent Care

At Battle Creek (Calhoun County), Michigan, all care of the indigent is now given by medical or dental society members who report their work to social service workers for investigation. If approved, the bill goes to the Director of Social Relief for pro-rata payment out of general funds. All free clinics have been abolished.

* * *

There are special services in coöperation with Health Departments for immunization, smallpox vaccination, etc.; physical examinations, tuberculosis and cancer campaign, forms of school service, health education, child health and county tonsil clinics, etc., in Detroit and Cleveland.

* * *

There are plans for regulation of hospital, clinic and dispensary admissions with the County Medical Society participating in Cleveland, Mondre county, Rochester, N. Y., Philadelphia and Binghamton, New York.

* * *

All care of the indigent in Easton and Bethlehem and Allentown, Pennsylvania (Northampton County), is now done under the direction of the Public Relations Committee of the Northampton County Medical Society, thus saving

the County Poor Directors more than \$2,000 over the cost in 1933 under a contract plan.

Patients have free choice of physicians and the work is done by members on a fee schedule with arrangements for credit rating and extended payments.

Important to Members

At the recent session of the legislature two laws were passed that directly concern the medical profession. These laws are published verbatim below. The first one Chapter 165, a law requiring physicians and others to report all wounds caused by the discharge of a fire arm, when first introduced required the reporting of all knife wounds and all wounds made by a deadly weapon. In accordance with our suggestion the bill was amended so that it is restricted solely to the discharge of a fire arm, and it was further amended to provide that the report shall be confidential and that the physician shall not, by reason thereof, be subpoenaed, examined or forced to testify in court. The law in its present form is similar to the New York statute and a violation is punishable as a criminal offense. We suggest that the members of the medical profession familiarize themselves with this law by reading the same in order that they will not subject themselves to any such prosecution.

Chapter 359 authorizes every county board in this state to provide for the hospitalization in hospitals within the county or elsewhere within the state, of indigent persons.

The original University Hospital law provided that the University Hospital should be the primary and principal place to hospitalize the indigent. This wording resulted in some of the county attorneys ruling that it was the *only* hospital at which the indigent could be hospitalized. This in turn resulted in the passage of Chapter 393, Laws of 1933, which applied only to counties of a population of fifty thousand to seventy thousand inhabitants. The 1933 law made it mandatory to hospitalize the indigent in hospitals rated Class A by the American College of Surgeons. It also prevented the medical profession from being paid for their services and limited the hospital to a charge of one half the total charge at the University Hospital. The new law makes no restriction as to the hospital except that it be located within the State of Minnesota. It further provides that the cost of hospitalization shall not

exceed the *full rate* charged at the University Hospital. This amount is exclusive of medical and surgical care. The purpose of this law is to remove any doubt as to the right of the Board of County Commissioners to provide for the hospitalization of the indigent.

A detailed report of the activities of your legislative committee has been submitted to the secretary of each component Medical Society. It will undoubtedly be called to the attention of members at their next regular meetings.

Committee on Public Policy and
Legislation

DR. H. M. JOHNSON, *Chairman.*

CHAPTER 350—H. F. No. 1408

AN ACT authorizing County Boards to Provide for Hospitalization of the Indigent of Such Counties, and Repealing Laws 1933, Chapter 393.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. The county board of any county in this State is hereby authorized to provide for the hospitalization in hospitals within the county or elsewhere within the State, of indigent residents of such county who are afflicted with a malady, deformity, or ailment of a nature which can probably be remedied by hospitalization and who are unable, financially, to secure and pay for such hospitalization or, in the case of a minor, whose parent, guardian, trustee or other person having lawful custody of his person, as the case may be, is unable to secure or provide such hospitalization.

Section 2. Whenever the existence of a case described in Section 1 of this act shall come to the notice of the sheriff, town clerk, health officer, public health nurse, peace officer, public official, or physician or surgeon it shall be his duty to, and any other person may, file with the county auditor of the county of the legal residence of such indigent person requiring care an application for the hospitalization of such indigent person. Such application shall be made in such form as the county board of such county may prescribe, and shall contain the name, age, residence and physical condition of the person sought to be hospitalized and shall contain also a full statement of his financial situation and of the persons, if any, legally charged with his care and support, and such application shall be verified. The county board shall make a careful investigation of the matter in such manner as it shall deem advisable and expedient, and it shall be the duty of any public official of any county, city, village, or town of the residents of the person sought to be hospitalized to supply the county board on request therefor all the information within his knowledge relative to the financial condition of the person sought to be hospitalized and of all persons, if any there be, who are legally liable for the support of such person. If after such investigation the county board shall be satisfied that the person on whose behalf the application is made is not financially able to provide himself with such hospitalization or in case of a minor, his parents, guardians, trustee, or other person having legal custody over him or legally responsible for his support and maintenance is not financially able to provide such hospitalization, then said county board shall direct the county physician or some other physician, to make an examination of the person on whose behalf such application was made. Such physician shall make and file with the county board a verified report in writing setting forth the nature and history of the case and such other information as will likely aid in the medical and surgical treatment of the disease, malady, deformity, or ailment affecting such person, and shall state in such report his opinion whether or not the condition of such person can probably be remedied at a hospital. Such report shall be made in duplicate, one copy of which shall be filed with the county auditor and the other shall be transmitted to the hospital at which such afflicted person is hospitalized; such report shall also give any information the examining physician shall have or acquire relative to the financial ability of the afflicted person to pay for the hospitalization and treatment of his disease, malady, deformity, or ailment, together with any other information such physician may deem helpful to the county board or the physician attending him.

If upon filing of such report and a full investigation of the application the county board shall be satisfied that the case is one which could be remedied by hospital treatment and that such afflicted person is financially unable to secure or provide the same for himself, and that the persons legally charged with the support and maintenance of such person, if any there be, are financially unable to provide such hospitalization, the county board may grant or approve said application. If the county board is not so satisfied, it may take additional testimony or make such further investigation as it shall deem proper and shall reject any application if it finds that the facts do not merit the expenditure of public money for the relief of such afflicted person. Upon the approving and granting such application and the relief therein prayed for, the chairman of such county board shall arrange for the hospitalization of such afflicted person. If the county board shall find that the applicant or the person legally responsible for his support and maintenance is not able to pay in full but is able to pay in part for such hospitalization at such hospital the county board may approve such application of such afflicted person on such terms of division of hospital charges and costs as it may deem equitable and just. The county board shall provide for taking such afflicted person to the hospital. Provided, however, that when a physician certifies that an emergency exists in any case, and that he believes that the person suffering is unable to pay for hospitalization such person shall be admitted to any such hospital upon the order of the chairman of the county board or upon the order of the county commissioner of the district in which such alleged indigent person resides; and thereafter an investigation shall be made in the manner herein before provided.

Sec. 3. The cost of hospitalization of such indigent persons exclusive of medical and surgical care and treatment shall not exceed in amount the full rates fixed and charged by the Minnesota general hospital under the provisions of Laws 1921, Chapter 411, and acts amendatory thereof, for the hospitalization of such indigent patients. The cost of the hospitalization of indigent persons under the provisions of this act shall be paid by the county of the legal residence of such indigent person at such times as may be provided for in such contract.

Sec. 4. Laws 1933, Chapter 393, is hereby repealed. Approved April 29, 1935.

CHAPTER 165—H. F. No. 212

AN ACT to require Physicians, Surgeons, all persons engaging in the practice of healing, Superintendents or Managers of Hospitals, Nurses, and Pharmacists, whether such persons are licensed or not, to report to the proper law enforcement authorities, all injuries to patients inflicted by the discharge of a gun, pistol or other firearms, and making failure to comply herewith a gross misdemeanor.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. Every physician, every surgeon, every person authorized to engage in the practice of healing, every superintendent or manager of a hospital, every nurse and every pharmacist whether such physicians, surgeons, persons engaged in the practice of healing, superintendent or manager of any hospital, nurse and pharmacist be licensed or not, shall immediately report to the proper police authorities as herein defined all bullet wounds, gunshot wounds, powder burns, or any other injury arising from, or caused by the discharge of any gun, pistol or any other firearm, which wound he is called upon to treat, dress or bandage.

Section 2. The report required by the preceding section shall be made forthwith by telephone or in person, and shall be promptly supplemented by letter, enclosed in a securely sealed, postpaid envelope, addressed to the sheriff of the county in which such wound is examined, dressed or otherwise treated; except that if the place in which such patient is treated for such injury or his wound dressed or bandaged be in a city of the first, second or third class, such report shall be made and transmitted as herein provided to the chief of police of such city instead of the sheriff. The office of any such sheriff and of any such chief of police shall keep such report as a confidential communication and shall not disclose the name of the person making the same, and the party making such report shall not by reason thereof be subpoenaed, examined, or forced to testify in court as a consequence of having made such a report.

Section 3. The requirements of this act shall not apply to a nurse employed in a hospital nor to a nurse regularly employed by a physician, surgeon or other person practicing healing where the employer has made a proper report in compliance herewith.

Section 4. Any person who violates any provision of this act is guilty of a gross misdemeanor. Approved April 13, 1935.

More About German Health Insurance

Publication of the complete pamphlet "Will Germany Copy America's Mistakes?" by Gustav Hartz, styled as a labor economist and former Reichstag member of Berlin, in a recent issue of the *New York State Medical Journal*, has provoked a stormy debate lasting over several issues in the correspondence columns of the journal.

A résumé of the Hartz pamphlet was printed in these columns in the March issue of MINNESOTA MEDICINE.

Several of the letter writers have hotly charged Hartz with being a Nazi propagandist with a typical Nazi slant toward all prefascist social and labor movements in Germany.

Others, like Dr. Paul G. Frank, Kew Gardens, Long Island, while disclaiming any knowledge as to the motives of Mr. Hartz, concur heartily in his dissatisfaction with health insurance in Germany.

Says Dr. Frank in an interesting communication printed in the May 15 issue of the *New York Journal*:

Panel Doctor

"During the thirty years of my experience in Germany I witnessed a deterioration of the medical profession. It was gradual. It came about by the removal of sanctions of preferment by skill and the substitution of preferment by convenience. What I mean is that an insurance scheme soon becomes a business—it must do so to succeed, while the practice of medicine must be a profession to succeed at its best, and the two will not mix.

"In Germany the physician who was most adaptable to the advancement of the plans of the insurance officials and who most pleased the patient for reasons quite other than skill obtained the most rapid preferment. It is true that there were possibilities left that made it possible to adhere to higher standards—I, for instance, had such a possibility, being a specialist—but many men who might have gone far were ruined by the stultifying panel practice.

"He Must Live"

"In the late nineties at the university we did not much esteem the panel idea. In those early years of state insurance even the lay public knew these doctors to be second rate. Some years later when I left the University clinic I ceased to laugh at the panel doctor for I became one myself. My fee averaged 50 cents each for medical cases of three months' duration. Figure out for yourself how many of these I had to have to live decently, and figure also how much time I

could give to each case. Of course, it goes without saying that a young man of high professional ideals does not think first of money, but first of his duty to his patient; yet he is forced under sickness insurance to make a decision between these two motives which often disastrously affects his attitude toward his work. It is only too easy to weaken for he must live. . . .

"The American people will do well to pause long before adopting sickness insurance, remembering that such a system once instituted is sure to perpetuate itself. I have been in this country a year and a half. Some of the hospitals here are the most wonderful I have seen anywhere in the world and I have travelled extensively in Europe. I wonder whether the quality of medical care given in the United States is not superior to that which is given in countries where insurance plans are in operation. . . ."

SERA Education

Mr. Henry Weiner of Saint Paul, SERA lecturer on current economic problems and economic theory, talked for one hour and a quarter one evening in May to a Farmer-Labor Club at Mechanic Arts high school in Saint Paul. Subject: "Socialized Medicine."

Mr. Weiner favors the socialization of medicine after the German plan in America and he said so. Students on the subject would have found nothing new or especially interesting in this talk—judging by a stenographic transcript. But the six men and women who were members of the club and who were not students of the subject, appeared to be interested. They asked questions.

Mr. Weiner, as a SERA speaker, paid for by federal funds, took on the color of an official government authority and his remarks undoubtedly appeared to have a semi-official character.

SERA officials in charge of the education department disclaim any knowledge of this particular appearance of their lecturer or of the subject on which he talked.

Mr. Weiner who is, incidentally, a graduate of the school of economics of the University of Minnesota, probably has a free hand in his selection and handling of economic subjects.

There seems to be no good reason, however, why enlightened physicians should not inquire into the character of lectures of this sort if they are proposed elsewhere and ask, at least, for more complete and exact presentation of a difficult and exceedingly controversial subject.

Inevitable Reactions

It was to be expected that the so-called "liberals" and liberal weeklies would find much cause for congratulation in the endorsement by the California State Medical Association of a plan for compulsory contributory health insurance in California.

The unfortunate repercussion of this action on the part of California will undoubtedly be felt in many remote corners of the country where the abnormal conditions which led to the action of the medical organization in California are entirely absent.

Note, as an instance of this inevitable reaction, the editorial comment that appeared April 10 in *The Nation*:

"In voting to support compulsory health insurance just two weeks and a day after a special meeting of the House of Delegates of the American Medical Association in Chicago re-affirmed opposition to it in all its forms, the California State Medical Association has given a spectacular rebuff to the conservative leadership of organized medicine. It is the first time in this country—perhaps in the world—that an important medical group has taken such a stand and it will do something to relieve the profession in this country from the stigma of short-sighted obstruction from which it has long suffered.

"The California vote was, in fact, a rebuff to state as well as to national officialdom . . . a rebellion of the rank and file that burst through the restraints of the usual do-nothing leadership . . . which will make it possible for California to avoid the mistakes and delays which have characterized the beginning of health-insurance schemes abroad."

The prejudice and misinformation inherent in this attitude of *The Nation* editors is obvious to every well informed medical man. It is not so obvious to the majority of lay readers of this scholarly radical weekly. Publications of the American Medical Association do not reach this lay public. Neither do the soberer reports of actual experience with health insurance abroad.

Mr. Kingsbury Leaves the Milbank Fund

Directors of the Milbank Fund have definitely and officially announced that John A. Kingsbury, leader and spokesman for the Fund for 22 years, has severed his connection with the Fund.

Differences of opinion as to policy with the Fund's directors were said to be the reason.

Various stories are told or intimated about

the source of these differences. One is to the effect that the force of medical opinion began to exert itself in a practical way upon the Borden Company, source of income of the Milbank family. This story may have no foundation in fact.

Following is the note on the matter printed in *Better Times*, weekly welfare bulletin of the Welfare Council of New York City carrying news of all social work in the region of New York City:

"Mr. Kingsbury was Commissioner of Charities under the Mitchell Administration, spokesman for the Milbank Fund for 22 years and secretary since 1922.

"Following a trip through Russia where he saw its program of health insurance in operation (see *Red Medicine* by Mr. Kingsbury and Sir Arthur Newsholme), Mr. Kingsbury advocated adoption of a health insurance plan in the United States. The Fund, on the other hand, although indicating approval of some system of social insurance to cover the 'five major hazards,' has never endorsed compulsory contributory health insurance or any other plan to distribute costs of medical care."

Minnesota State Board of Medical Examiners

Minneapolis Quack Pleads Guilty to Unlawful Practice of Healing

State of Minnesota vs. Wm. M. Snyder

William M. Snyder, sixty-three years of age, entered a plea of guilty in the District Court of Hennepin County on May 1, 1935, to an information charging him with practicing healing without a basic science certificate. Snyder, who lives with his wife and two children at 3029 Park Avenue, Minneapolis, opened an office in his home to engage in the practice of healing. He claims to have studied medicine, chiropractic and naturopathy. The only diploma that he seems to possess is one for optometry.

The defendant charged \$3.00 for an examination and \$1.50 per treatment. He claimed to be an expert on diet and he also gave some light ray treatments. He stated that he had cured cases of cancer and tuberculosis and that he relied chiefly upon his ability to prescribe the proper diet to effect a cure.

When arrested Snyder admitted that he was not licensed to practice healing anywhere in the United States. Snyder has been in the City of Minneapolis about a year and previous to that time engaged in the practice of healing at Madison, South Dakota, and also at Sioux Falls, South Dakota. He claims that he has never been arrested previously for practicing healing. When arraigned before the Honorable E. A. Montgomery, Judge of the District Court, Snyder freely admitted his guilt and informed the Court that he could obtain a license to practice optometry in the State of

Texas, and that he desired to remove to that state with his wife and family. Judge Montgomery imposed a sentence of six months in the Hennepin County Jail but placed the defendant upon probation. The Court advised Snyder that in the event he practiced healing in any form in this state, he would have to serve his entire jail sentence.

The State Board of Medical Examiners wishes to express its appreciation for the coöperation shown in this case by Mr. Ed J. Goff, County Attorney of Hennepin County, and his assistant, Mr. L. A. Selover.

Indian "Doctor" Sent to Jail at Winona

State of Minnesota vs. Mells White

Mells White, alias Mike Roller, alias Marion Roller, alias Marion Royle, thirty-six years of age, a full blooded Osage Indian, giving Tulsa, Oklahoma, as his address, entered a plea of guilty to a charge of practicing healing without a basic science certificate on May 9, 1935, before the Honorable Karl Finkelnburg, Judge of the District Court at Winona, Minnesota.

Judge Finkelnburg sentenced the defendant to pay a fine of \$200 or serve two months in the Winona County Jail. In default of payment of the fine the defendant was committed to the Winona County Jail.

Along in the fall of 1934 White came to Winona with his wife and represented himself in that community as the salesman for Viavi medicines, claiming that these medicines were manufactured in San Francisco and sold through a branch office in Chicago. On or about March 8, 1935, he diagnosed the case of one John Michalowski as ulcers and stated that he could cure it in forty treatments. He obtained \$13.25 cash in advance and gave Mr. Michalowski some medicine in a capsule. He made seven or eight calls to the Michalowski home and when it became apparent that Mr. Michalowski was getting worse instead of better, a physician was called and Mr. Michalowski was removed to the hospital where he died on April 6, from cancer of the stomach. This defendant treated several individuals in that community and following an investigation made by the State Board of Medical Examiners, a complaint was filed against him charging him with practicing healing without a basic science certificate. When arraigned in Municipal Court in Winona, he waived his hearing and was held to the District Court under bail of \$500 which was not furnished.

Under the name of Marion Roller, this defendant served seven years, two months and six days in the Wisconsin State Prison at Waupun on a charge of carnal knowledge, having been sentenced by Judge Thompson, Hudson, Wisconsin, in April, 1926. Under the name of Marion Royle he served 110 days at the Indiana State Farm at Greencastle, Indiana, on a charge of carrying concealed weapons. Under the name of Mells White he pleaded guilty to two charges of practicing healing without a basic science certificate at Janesville, Wisconsin, in July, 1934. He was given a suspended sentence of \$100 or ninety days on each of these charges.

While it is unlikely that this defendant will again

attempt to practice healing in the State of Minnesota, after having served his jail sentence, the State Board of Medical Examiners respectfully requests that it be immediately notified if any such individual appears anywhere in the State of Minnesota. The Board also wishes to express its appreciation of the coöperation shown in this case by E. D. Liberia, County Attorney of Winona County, H. C. Riebau, Chief of Police of Winona, and Arthur C. Brown, Sheriff of Houston County, Minnesota.

List of Physicians Licensed by the Minnesota State Board of Medical Examiners May 11, 1935

April Examination

By Examination

- Aldrich, Herrick John, U. of Minn., M.B., 1934, St. Paul, Minn.
Armstrong, Thomas D., Rush Med. Col., M.D., 1933, Rochester, Minn.
Baker, George Stansbury, U. of Maryland, M.D., 1933, Rochester, Minn.
Brunsting, Henry Albert, U. of Mich., M.D., 1930, Rochester, Minn.
Cusick, Paul Leo, Detroit Col. of Med. & Surg., M.B., 1931, M.D., 1932, Rochester, Minn.
Doyle, Thomas James, U. of Minn., M.B., 1934; M.D., 1935, Duluth, Minn.
Erickson, Alvin, U. of Minn., M.B., 1934, Des Moines, Iowa.
Erickson, Clarence Wilber, U. of Kansas, M.D., 1933, Rochester, Minn.
Erickson, Clifford Orvis, U. of Minn., M.B., 1934, St. Paul, Minn.
Hagen, Wayne Sigvart, U. of Minn., M.B., 1934, Kansas City, Mo.
Hanson, John Willard, U. of Minn., M.B., 1933; M.D., 1934; Minneapolis, Minn.
Harper, Robert Dana, U. of Minn., M.B., 1934; M.D., 1935; Duluth, Minn.
Heiberg, Olaf Marius, U. of Minn., M.B., 1934, Minneapolis, Minn.
Hoffman, Roy Albert, U. of Minn., M.B., 1934, St. Paul, Minn.
Iverson, Eleanor Beatrice, U. of Minn., M.B., 1934, Minneapolis, Minn.
Jensen, Reynold Archibald, U. of Minn., M.B., 1934, Minneapolis, Minn.
Johnson, Harold Clark, U. of Minn., M.B., 1934, St. Paul, Minn.
Keefe, Rolland Ellis, U. of Minn., M.B., 1934, St. Paul, Minn.
Kibler, Francis Elmo, U. of Colo., M.D., 1933, St. Paul, Minn.
Lange, William Anding, U. of Minn., M.B., 1934; M.D., 1935; Lake City, Minn.
Lodmell, Lenier Arthur, Northwestern, M.B., 1934; M.D., 1934; Chicago, Ill.
MacLean, Alexander Robinson, U. of Manitoba, M.D., 1934, Rochester, Minn.
McGreane, Norbert Arthur, U. of Louisville, M.D., 1934, St. Paul, Minn.
McKean, Robert Scott, Northwestern, M.B., 1932; M.D., 1933; Rochester, Minn.
Menville, John Gilmer, Tulane U., M.D., 1930, Rochester, Minn.
Miller, Marvin Jesse Arthur, U. of Minn., M.B., 1934; M.D., 1935; Pine River, Minn.
Moebring, Henry George, U. of Minn., M.B., 1935, Hovland, Minn.

IN MEMORIAM

Morgan, Hugh Owen, U. of Minn., M.B., 1934, St. Paul, Minn.
 Nash, Leo Axel, U. of Minn., M.B., 1934, Minneapolis, Minn.
 Nelson, Arthur Alfred, U. of Minn., M.B., 1934, Minneapolis, Minn.
 Nelson, Wilburn Oliver Bennett, U. of Minn., M.B., 1935, Ironton, Minn.
 Penk, Engward Louis, U. of Minn., M.B., 1934, Duluth, Minn.
 Ripka, Emily L., U. of M., M.B., 1933; M.D., 1934; Minneapolis, Minn.
 Schroepel, John Earl, U. of Minn., M.B., 1935, Minneapolis, Minn.
 Sher, David Adler, U. of Minn., M.B., 1934, Minneapolis, Minn.
 Simonton, Kinsey MacLeod, Geo. Wash. U., M.D., 1933, Rochester, Minn.
 Sowers, Bouton Franklin, U. of Mich., M.D., 1931, Rochester, Minn.
 Stickney, James Minott, Jr., Rush Med. Col., M.D., 1934, Rochester, Minn.
 Tillisch, Jan Henrik, U. of Minn., M.B., 1932; M.D., 1933; Rochester, Minn.
 Trinkle, Albert Joseph, U. of Kans., M.D., 1933, Minneapolis, Minn.
 Walsh, Maurice Nihill, Detroit Col. Med. & Surg., M.D., 1931, Rochester, Minn.
 Wilmot, Cecil Alfred, U. of Minn., M.B., 1935, Duluth, Minn.
 Wolff, Luther Horn, U. of Pa., M.D., 1932, Rochester, Minn.
 Wood, George Archie, Stanford U., M.D., 1934, Rochester, Minn.
 Wright, Wale Samuel, U. of Minn., M.B., 1934, Minneapolis, Minn.

By Reciprocity

Prendergast, John James, Loyola U., M.D., 1932, St. Paul, Minn.
 de Berry, Ellett Morrison, U. of Texas, M.D., 1922, St. Paul, Minn.

In Memoriam

William Alison Lumley
 1857-1935

Dr. William Alison Lumley, a practising physician of Minnesota and Wisconsin since 1894, died at his home in Ellsworth, Wisconsin, April 9, 1935, the day before his seventy-eighth birthday, after a six days' illness with lobar pneumonia.

Dr. Lumley was born in Ringwood, Illinois, and received his early education in the village school at that place. For several years he taught a rural school and operated a farm near Ringwood. In 1879, he was married to Jennie Vogel, and four children were born of this marriage, of whom two sons died in infancy.

It was thus later in life than most students that he studied Medicine, attending the Illinois College of Physicians and Surgeons in Chicago, from which he graduated in 1893. The same year his wife died, following which, in 1894, he located in Renville, Minnesota, for the practice of his profession. In 1896, he was married to Helen M. Lumley, and one daughter was born of this marriage.

In 1911, he moved to Ellsworth, Wisconsin, where

he remained in active practice until the last few years, and even during this time, he attended the calls of some of his old friends and patients.

He is survived in his immediate family by his wife and a daughter, Mrs. Charles E. Campbell of Ellsworth, Wis., a daughter, Mabel E. Lumley, of Moorhead, Minn., and a daughter, Mrs. L. G. Smith, of Montevideo, Minn.

Dr. Lumley was a lifelong member of the Methodist Episcopal Church and was a member of the Masonic Lodge and his county and state medical societies.

He was a man of an exceptionally wide range of interest and reading outside as well as inside his profession; he was very public spirited and was a civic leader in both villages in which he had made his home. In his death, his community loses a valuable citizen as well as an excellent family doctor, considered in the oldest and best meaning of that term.

Arthur T. Mann
 1866-1935

Dr. Arthur T. Mann was born in New York City January 21, 1866. Upon the death of his father in 1876 his family moved to Rochester, New York, and a little later to Eau Claire, Wisconsin. In the early eighties the family moved to Minneapolis and in 1888 Arthur Mann received his B.S. degree from the University of Minnesota. While at the University he helped organize and played on the first University of Minnesota football team. He also played on the baseball team.

Dr. Mann took his medical course at Harvard where he graduated *cum laude* in 1896. After a year's internship at the Channing Hospital in Brookline, Massachusetts, he served as house surgeon at the Boston City Hospital for two years and an additional year as resident at the Massachusetts State Hospital. Post-graduate work was taken later at Boston in 1902 and abroad in 1904 and 1914.

Beginning practice in Minneapolis in 1899, Dr. Mann became at once associated on the Minnesota Medical School faculty as Assistant in Surgery in 1899, Instructor in 1902, Clinical Professor in 1906, and Associate Professor of Surgery in 1913. He also was chief of the Surgical Service of the Minneapolis General Hospital from 1913 to 1922.

During the World War Dr. Mann served as Major in the Medical Corps and was Chief Surgeon at Camp Dodge. Following the war he was Surgical Consultant in the United States Public Health Service, when he performed an enormous amount of surgical work on former soldiers.

As Secretary-Treasurer of the Western Surgical Association for sixteen years and later as President he contributed largely to the growth of that society.

Medical society memberships included the Hennepin County Medical Society, the Minnesota State and American Medical Associations, Minneapolis Surgical Society, Minnesota Pathological Society, Minnesota Academy of Medicine and American College of Sur-

OF GENERAL INTEREST

geons. He held membership in the Minneapolis Club, Woodhill Country Club and the Lafayette Club.

In 1904 Dr. Mann married Winona Orff, who survives him. By his death April 15, 1935, the medical profession loses one of its outstanding members from the standpoint of character and ability.

OF GENERAL INTEREST

Dr. A. W. Eckstein is back in Mankato. His many friends are glad to see him about again.

Dr. and Mrs. O. J. Seifert of New Ulm have returned from a three weeks' visit in California.

Dr. J. S. Shrader of Hollandale has purchased the practice of Dr. H. A. Schneider at Jordan, Minnesota.

Dr. L. R. Parson of Elbow Lake has opened an office at Fergus Falls for the practice of his specialty, urology.

Dr. E. C. Haagenon, formerly of Grand Forks, North Dakota, has opened offices at Shelley, Minnesota, for the practice of medicine.

Dr. K. E. Bergquist, formerly of Duluth, has moved to Battle Lake, Minnesota, where he will be associated in practice with his son-in-law, Dr. C. A. Boline.

Dr. Edward D. Greenberger, who has charge of the X-ray Department of the Mankato Clinic, was married Thursday, May 16. He married a Southern girl.

Dr. Marvin O. Henry addressed the members of the McLeod County Medical Society at Hutchinson, Minnesota, May 17, on "The Low Back Problem." Lantern slides were shown.

The Blue Earth County Medical Society held its annual meeting in May, and the surrounding counties were asked to participate. Dr. Albert Snell of the Mayo Clinic was the main speaker.

A new \$150,000 receiving hospital will be erected at the St. Peter state institution as the result of action taken by the state legislature. Dr. George H. Freeman is superintendent of the institution.

Dr. William K. Jacoby of Evanston, Wyoming, was a recent visitor in Mankato. He used to practice in the vicinity. He reports conditions very good at his present location, and his health is excellent.

Dr. Henry E. Michelson, Professor of Dermatology at the University of Minnesota, was a guest of the physicians of Butte and Anaconda, Montana, on May 18. He gave a clinic and lecture on diseases of the skin and syphilis.

Dr. G. A. Dahl and Dr. J. T. Schlesselman of the Mankato Clinic took a fishing trip to Basswood Lake in Northern Minnesota, in May. The trip was essentially a fishing one, but moving picture operations were very much in evidence.

The alumni of the University of Minnesota and the Mayo Foundation attending the American Medical Association meeting at Atlantic City in June will meet for dinner at the Ambassador Hotel, June 12. Those attending will probably be entertained by the showing of some pictures of the champion 1934 Minnesota football team.

Dr. Fetterly, formerly an interne at St. Mary's Hospital, Duluth, now practicing in Minneapolis, was seen in Duluth recently, headed north to some real trout fishing. He reported that the flying fish in Southern Minnesota were too asthmatic to bite properly, incidental to silicotic gills developed during recent devastating dust storms!

Drs. P. G. Boman and M. G. Gillespie, with their wives, attended the meeting of the American College of Physicians at Philadelphia the week of April 29. They practiced an interesting diversion by dipping deeply by motor into the South, and visiting some of the ancient fields of battle of the Civil War and certain active fields of present engagement in Washington, D. C. The circuit home was made via New York. They reported our European metropolis as looking "Farley well."

Dr. Clifford T. Ekelund of Pontiac, Michigan, has been selected as Secretary of the Michigan State Medical Society, succeeding Dr. Frederick C. Warnshuis, who resigned to accept a similar position with the California Medical Association. Dr. Ekelund graduated at the University of Minnesota medical school in 1918. After graduation he served as resident at Minneapolis General Hospital and the following year as resident in Surgery at the University of Minnesota Hospital. He is the son-in-law of Dr. George B. Weiser, New Ulm.

The staff of Nopeming Sanatorium provided the program and staff rounds for an enthusiastic meeting of the St. Louis County Medical Society on the evening of May 9. The medical program was presented after a dinner at 6:30. A number of the Medical Auxiliary members espoused bridge, the while chest experts Lamont, Hedberg, Loewen and Laird divulged the intricacies of disposing of the phrenic on occasion; sedimenting bloods to denote degree of tissue destruction; guinea pig inoculations to decipher prognostic omens; the facts about sanatorium employees and their chests. All those present felt the doctors were well employed and their patients fortunate. The bridge was of an equally high Culbertsonian order.

MINNESOTA STATE MEDICAL ASSOCIATION

Eighty-second Annual Meeting

Minneapolis, Minnesota

June 24, 25, 26, 1935

OFFICERS

President—W. A. COVENTRY.....Duluth
First Vice President—A. G. CHADBOURN.....Heron Lake
Second Vice President—E. S. BOLEYN.....Stillwater
Secretary—E. A. MEYERDING.....Saint Paul
Treasurer—W. H. CONDIT.....Minneapolis

COUNCILORS

First District—H. Z. GIFFIN.....Rochester
Second District—L. L. SOGGE.....Windom
Third District—H. M. WORKMAN.....Tracy
Fourth District—J. S. HOLBROOK.....Mankato
Fifth District—G. A. EARL.....Saint Paul
Sixth District—J. M. HAYES.....Minneapolis
Seventh District—W. W. WILL.....Bertha
EIGHTH DISTRICT—W. L. BURNAP.....Fergus Falls
NINTH DISTRICT—B. S. ADAMS.....Hibbing

COMMITTEE ON SCIENTIFIC ASSEMBLY

W. A. COVENTRY, President.....Duluth
A. G. CHADBOURN, First Vice President.....Heron Lake
E. A. MEYERDING, Secretary.....Saint Paul

SECTION ON MEDICINE

F. H. K. SCHAAF.....Minneapolis
P. P. VINSON.....Rochester

SECTION ON SURGERY

H. B. ZIMMERMANN.....Saint Paul
HARRY KLEIN.....Duluth

CLINICAL DEMONSTRATIONS

W. A. O'BRIEN.....Minneapolis

LOCAL ARRANGEMENTS

JAMES KERR ANDERSON.....Minneapolis

REFERENCE COMMITTEE

J. C. HULTKRANS.....St. Paul
S. H. BAXTER.....Minneapolis
A. G. CHADBOURN.....Heron Lake
C. O. ESTREM.....Fergus Falls
M. C. PIPER.....Rochester

WOMEN'S AUXILIARY TO THE STATE MEDICAL ASSOCIATION

OFFICERS

President—MRS. MARTIN NORDLAND.....Minneapolis
President-Elect—MRS. J. F. ELIAS.....Duluth
First Vice President—MRS. E. M. HAMMES.....St. Paul
Second Vice President—MRS. A. C. BAKER.....Fergus Falls
Third Vice President—MRS. A. H. SANFORD.....Rochester
Recording Secretary—MRS. B. R. KARN.....Ortonville
Corresponding Secretary—MRS. H. F. WAHLQUIST.....Minneapolis
Treasurer—MRS. J. F. NORMAN.....Crookston
Auditor—MRS. NEIL S. DUNGAY.....Northfield
Historian—MRS. J. A. THABES.....Brainerd
Parliamentarian—MRS. W. J. BYRNES.....Minneapolis
Past President—MRS. A. A. PASSER.....Olivia

PROGRAM

Business Session

THE LEAMINGTON

SUNDAY, JUNE 23

9:30—Council.....East Room
Reference Committee.....Queen Anne Room

SUNDAY EVENING

7:00—House of Delegates.....Ball Room

MONDAY, JUNE 24

11:45—Council.....East Room

TUESDAY, JUNE 25

11:45—House of Delegates.....Ball Room
(Luncheon)

11:45—Council.....Queen Anne Room

WEDNESDAY, JUNE 26

GENERAL ASSEMBLY

10:55—Presentation of Officers..Lecture Hall Audi-
torium

ANNOUNCEMENTS

Scientific Exhibit Award: A medal has been donated by the Southern Minnesota Medical Association for the best scientific exhibit. The Scientific Demonstrations and exhibits shown in the exhibit hall are eligible.

Hobby Show: Hobbies of Minnesota physicians including paintings, wood carvings, musical scores, sculpture, stamp collecting, firearms, antiques, game trophies, trout flies, etc., etc., will be exhibited in Committee Room No. 3. These exhibits will be open from 8 A. M. to 6 P. M.

The Scientific and Technical Exhibits are located on the first floor of the Auditorium. These exhibits are of unusual interest and every member should arrange to spend some time visiting them. The exhibitors have gone to a great deal of effort in order to present to you medical subjects of special interest.

You are advised to read the list of Scientific Demonstrations and Exhibits over carefully, check them and make it a point to visit those you are interested in early.

The Women's Auxiliary is printing its own programs and the members should see that they obtain one so that they will not miss the delightful social events that have been provided by the Women's Auxiliary of the Hennepin County Medical Society.

MAKE YOUR HOTEL RESERVA- TIONS NOW!

Headquarters—The Leamington
Curtis Hotel across the street

PROGRAM EIGHTY-SECOND ANNUAL MEETING



HARRY L. ALEXANDER, M.D.
St. Louis, Mo.



FRANK H. LAHEY, M.D.
Boston, Mass.



EDMUND ANDREWS, M.D.
Chicago, Ill.



WILLIAM P. MURPHY, M.D.
Boston, Mass.

Scientific Sessions

MONDAY, JUNE 24

Morning Session

UNIVERSITY OF MINNESOTA CLINICS

Diseases Characterized by Prolonged Fever
HOBART A. REIMANN.....Minneapolis

Allergy in Childhood
A. V. STOESEER.....Minneapolis

Some Surgical Problems
W. T. PEYTON.....Minneapolis

BIOLOGICAL EFFECTS OF THYMUS AND
PINEAL EXTRACTS (HANSON)

ADOLPH M. HANSON.....Faribault

CITIZENS AID SOCIETY MEMORIAL
ADDRESS

MONDAY, JUNE 24

Afternoon Session

THE PRESENT STATUS OF
CLINICAL ALLERGY

HARRY L. ALEXANDER.....St. Louis
Associate Professor of Medicine, Washington University School of Medicine, and Associate Physician at Barnes Hospital.
Minneapolis Clinical Club, *Sponsor*

SOME OF THE NEWER DEVELOPMENTS
IN HYPERTHYROIDISM AND
HYPERPARATHYROIDISM

FRANK H. LAHEY.....Boston
Director, Surgery Lahey Clinic
Surgeon-in-Chief to the New England Baptist Hospital and Surgeon to the New England Deaconess Hospital.
Minneapolis Surgical Society, *Sponsor*

THE PATHOGENESIS OF
GALL-BLADDER DISEASE

EDMUND ANDREWS.....Chicago
Professor of Surgery, The University of Chicago and Attending Surgeon at the Billings Hospitals.

MONDAY EVENING

Northrop Memorial Auditorium, 8:15 P. M.

DISEASES OF THE BLOOD

WILLIAM P. MURPHY.....Boston

TUESDAY, JUNE 25

Morning Session

SYMPOSIUM ON DISEASES OF THE BLOOD
THE RÔLE OF DRUG ALLERGY
IN THE ETIOLOGY OF PRIMARY
GRANULOCYTOPENIA

T. L. SQUIER.....Milwaukee
Associate Clinical Professor of Medicine, Marquette Medical School, and F. G. Madison, Assistant Clinical Professor, Marquette Medical School.
A. A. A. S., *Sponsor*

THE RÔLE OF IRON IN THE
TREATMENT OF ANEMIA

W. A. BLOEDORN.....Washington, D. C.
Professor of Medicine and Executive Officer, Department of Medicine, George Washington University School of Medicine.
A. A. A. S., *Sponsor*

WHAT WE HAVE LEARNED ABOUT
PERNICIOUS ANEMIA DURING TEN
YEARS OF TREATMENT WITH LIVER

WILLIAM P. MURPHY.....Boston
1934 Nobel Prize Winner in Physiology and Medicine; Instructor in Medicine, Harvard University Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital.
Hennepin County Medical Society, *Sponsor*

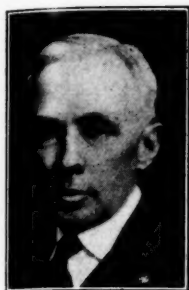
THE PREVENTION OF WHOOPING COUGH
WITH BACILLUS PERTUSSIS VACCINE

L. W. SAUER.....Evanston, Ill.
Associate in Pediatrics, Northwestern University Medical School
Northwestern Pediatrics Society, *Sponsor*

Discussions:

IRVINE MCQUARRIE, Minneapolis
O. W. ROWE, Duluth

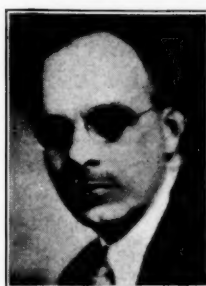
PROGRAM EIGHTY-SECOND ANNUAL MEETING



PERCY BROWN, M.D.
Boston, Mass.



E. L. SEVRINGHAUS, M.D.
Madison, Wis.



E. D. PLASS, M.D.
Iowa City, Iowa



THOMAS G. ORR, M.D.
Kansas City, Mo.

TUESDAY, JUNE 25

Afternoon Session

RUSSELL D. CARMAN MEMORIAL LECTURE

The Inception and Development of Fluoroscopy;
The Influence of Carman on Its Status in America
PERCY BROWN.....Boston
Minnesota Radiological Society, *Sponsor*

ENDOCRINE THERAPY

E. L. SEVRINGHAUS.....Madison
Associate Physician of Wisconsin General Hospital
and Associate Professor of Medicine, University of
Wisconsin.

SIMPLIFICATION OF OBSTETRIC CARE

E. D. PLASS.....Iowa City
Professor and Head of Department of Obstetrics
and Gynecology, State University of Iowa

TUESDAY EVENING

ANNUAL BANQUET

Minnesota State Medical Association and
Women's Auxiliary

The Leamington

6:00—Informal Dinner

8:00—Address of Welcome

J. M. HAYES.....Minneapolis
President, Hennepin County Medical Society

President's Address

W. A. COVENTRY.....Duluth

Introduction of President-Elect The Women's Auxiliary

MRS. F. J. ELIAS.....Duluth
President-Elect

8:30—Entertainment by Hennepin County Society
and Auxiliary

"No Speeches—Colorful Entertainment—No
Dull Moments."

Followed by dancing.

WEDNESDAY, JUNE 26

Morning Session

CLINIC

DYSENTERY: MEDICAL AND SURGICAL MANAGEMENT

1. Clinical Laboratory.....T. B. MAGATH
2. Roentgenology.....H. M. WEBER
3. Medical.....J. A. BARGEN
4. Surgical.....C. F. DIXON

Mayo Clinic, Rochester

VENOCLYSIS—A CONSIDERATION OF ITS POSSIBLE DANGERS

THOMAS G. ORR.....Kansas City, Missouri
Professor of Surgery, University of Kansas and
Surgeon-in-Chief to the University of Kansas Hos-
pital.

WEDNESDAY, JUNE 26

Afternoon Session

SUPPURATIONS OF THE NECK: CAUSE, DIAGNOSIS AND TREATMENT

JOHN F. BARNHILL.....Indianapolis
Professor of Surgery of the Head and Neck, Indiana
University of Medicine.
Minnesota Academy of Ophthalmology and Otolaryn-
gology, *Sponsor*

THE PROGNOSIS AND TREATMENT OF CORONARY OCCLUSION

W. S. MIDDLETON.....Madison
Professor of Medicine, University of Wisconsin.

MEDICAL QUESTION COURT

W. A. O'BRIEN.....Minneapolis
Chairman

A group of eminent specialists in the various lines
will assist Dr. O'Brien.

Scientific Cinema

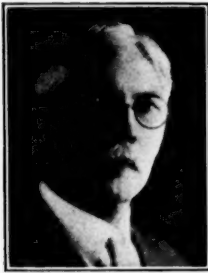
MONDAY-TUESDAY-WEDNESDAY

Morning Sessions

Canti and Chambers Films

F. L. RECTOR, Lecturer.....New York
Courtesy American Society for the Control of Cancer

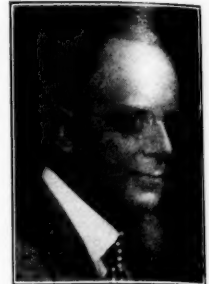
PROGRAM EIGHTY-SECOND ANNUAL MEETING



J. F. BARNHILL, M.D.
Indianapolis, Ind.



W. S. MIDDLETON, M.D.
Madison, Wis.



THEODORE WIPRUD
Milwaukee, Wis.

A Short Course in Medical Economics

MR. THEODORE WIPRUD.....Lecturer
Executive Secretary of The Medical Society of Milwaukee County and lecturer on Medical Economics at Marquette University School of Medicine, Milwaukee.

Discussion:

MR. R. G. LELAND.
Director of the Bureau of Medical Economics of the American Medical Association, Chicago.
MR. A. M. CALVIN, St. Paul.
MR. A. G. STASEL, Minneapolis.
MR. HERBERT H. KEEFE.

Subjects:

Medical Economics, Business Methods, and Investments.
Medical Charity: Where Should It Stop?
Fair Competition Among Physicians.
Contract and Panel Practice.
Health Insurance.
Organized Medicine Meets Current Problems.

Mr. Wiprud will present this course of six lectures, two daily. The present economic problems that are facing the medical profession will be discussed, as will also practical methods of business management of the physician's office.

Physical Therapy

HOWARD A. CARTER.....Lecturer
Secretary of the Council on Physical Therapy of the American Medical Association, Chicago.
Demonstrational lecture using physical apparatus to illustrate the production of high frequency currents; also showing the relation between mechanical, electrical and heat energy. Discussion of the meaning of certain physical electrical concepts and units.

Afternoon Sessions

Female Sex Cycle

L. F. HAWKINSON, Lecturer.....Brainerd
Courtesy Schering Corporation, Bloomfield, N. J.

The Management of Strabismus

WALTER H. FINK, Lecturer.....Minneapolis

First Aid Treatment of Fractures by Improved Splints for the Purpose of Transportation

WILLIS C. CAMPBELL, Producer.....Memphis, Tenn.
E. T. EVANS } LecturersMinneapolis
P. W. GIESSLER }

Magnet Operation for Removal of Steel and Acute Mastoidectomy

CHARLES N. SPRATT, Lecturer.....Minneapolis

Hygiene of Swimming

H. M. TAYLOR, Producer.....Jacksonville, Fla.
HORACE NEWHART, Lecturer.....Minneapolis

Isolation Techniques in Nursing

Communicable Disease Department, Minneapolis General Hospital, taken under the direction of Erling S. Platou and Ruth Johnson, R.N.

Scientific Exhibits and Demonstrations

Activities of Gillette State Hospital

American Medical Association

Hospitals in the United States

R. G. LELAND, Director
THOMAS G. HULL, Ph.D., Director of Exhibits

Physical Therapy, Application of

M. E. KNAPP, Medical Associate, Minneapolis
MR. HOWARD A. CARTER, Secretary, Council on Physical Therapy

Biologic Exhibit

United States Public Health Service, Washington, D. C.

Biological Photographic Association Traveling Salon

MR. JOHN M. MUIR, Oak Terrace

Cancer

F. L. RECTOR, Field Representative, Evanston, Ill.

Carbon Monoxide Poisoning

F. J. ELIAS, Duluth

Cardiac Standstill—Prevention and Treatment

M. H. NATHANSON, Minneapolis
Under the auspices of the Minnesota Public Health Association Heart Committee.

Cardio-Amplifier and Heart Sound Tracings

PAUL F. DWAN, Minneapolis

Childhood Infectious Disease, Prevention and Treatment of

ERLING S. PLATOU, Minneapolis

Childhood Rheumatism in Minnesota, Natural History of

M. J. SHAPIRO, Minneapolis

PROGRAM EIGHTY-SECOND ANNUAL MEETING

Civilian Conservation Corps

Model of a typical camp hospital with the "war chest" equipment now in use, which is the same as that used by the medical corps in the war.
Station Hospital Staff, Fort Snelling

Deafness Prevention and Amelioration

Committee on Prevention and Amelioration of Deafness of the Minnesota State Medical Association

Dental Health

Minnesota State Dental Association

W. A. DVORAK, D.D.S., Chairman, Oral Hygiene Committee

Diseases of the Hip Joint

V. L. HART, Minneapolis

Effects of Early Postoperative Feeding

O. I. SOHLBERG, St. Paul

Elliott Treatment for Pelvic Inflammatory Processes

W. A. HANSON and L. H. FOWLER, Minneapolis

Endocrine Studies

L. F. HAWKINSON, Brainerd

Eyes in Diabetes, Related Conditions in the

Minnesota Academy of Ophthalmology and Otolaryngology and Associates

Factors in Life Expectancy of Our Citizens

Minnesota Department of Health, A. J. CHESLEY, Secretary and Executive Officer

Child Hygiene, Division of

E. C. HARTLEY, Director

Preventable Diseases, Division of

ORIANNA MCDANIEL, Director

Sanitation, Division of

MR. H. A. WHITTAKER, Director

Vital Statistics, Division of

MRS. GERDA C. PIERSON, Director

Hernia, Injection Treatment of

A. F. BRATRUD, Minneapolis

Immunization

Under the auspices of the Minnesota State Medical Association Committee on Public Health Education

Mayo Foundation for Medical Education and Research

Asthma

L. E. PRICKMAN

Diabetic Patient

R. M. WILDER

Under the auspices of the Minnesota State Medical Association Committee on Diabetes

Diaphragmatic Hernia and Intrathoracic Tumors

S. W. HARRINGTON

Diaphragm of the Dog

W. S. LEMON, G. M. HIGGINS, Ph.D., and A. S. GRAMHAM

Fever Therapy

A. U. DESJARDINS and W. C. POPP

Idiopathic Steatorrhea (Nontropical Sprue)

A. M. SNELL, J. F. WEIR, J. D. CAMP, C. H. WATKINS, MILDRED ADAMS, Ph.D.

Medical Auxiliary

MRS. S. S. HESSELGRAVE, St. Paul, Chairman of Exhibit

MRS. JAMES BLAKE, Hopkins, Co-chairman

MRS. W. B. ROBERTS, Minneapolis, Chairman, Press and Publicity

June, 1935

Minneapolis Public Health

F. E. HARRINGTON, Commissioner of Health

Minnesota Medicine

Exhibit arranged by MR. J. R. BRUCE, publisher

Minnesota Public Health Association

Minnesota State Board of Medical Examiners

Minnesota State Medical Association Committees

Cancer

MARTIN NORDLAND, Chairman, Minneapolis

Deafness Prevention and Amelioration

HORACE NEWHART, Chairman, Minneapolis

Diabetes

R. M. WILDER, Chairman, Rochester

Hospitals and Medical Education

C. A. MCKINLAY, Chairman, Minneapolis

Industrial Relations

J. M. HAYES, Chairman, Minneapolis

Medical Economics

W. F. BRAASCH, Chairman, Rochester

Public Health Education

See demonstration on Immunization, under the auspices of this committee.

L. R. CRITCHFIELD, Chairman, St. Paul.

State Health Relations

T. H. SWEETSER, Chairman, Minneapolis

University Relations

F. J. SAVAGE, Chairman, St. Paul

Nursing the Community

Minnesota Nurses Association

Parent-Teacher Health Program

MRS. C. L. HAYES, Chairman, "The Summer Round-Up," Minnesota Congress of Parents and Teachers

Physical Therapy

M. E. KNAPP, Minneapolis

Professional Pharmacy

Under the auspices of the Interprofessional Relationships Committee of the Minnesota State Pharmaceutical Association

Strabismus, The Management of

WALTER H. FINK, Minneapolis

Under the auspices of the Minnesota Academy of Ophthalmology and Otolaryngology

Thymus and Pineal Extracts (Hanson)

An exhibit of live animals to demonstrate the effects of Thymus and Pineal Extracts (Hanson). Arthur Steinberg, Ph.D., of the Philadelphia Institute for Medical Research, will be present to discuss the experiments.

L. G. ROWNTREE, A. M. HANSON, J. H. CLARK, and ARTHUR STEINBERG, Ph.D.

Philadelphia Institute for Medical Research and Hanson Research Laboratory, Faribault, Minnesota

Trichomonas Vaginalis

W. A. COVENTRY and R. J. MOE, Duluth

Tuberculosis of the Ear

Wax Models

S. S. COHEN, Glen Lake Sanatorium, Oak Terrace

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Tuberculosis of the Mouth

Wax Models

F. L. JENNINGS, W. L. WILSON, D.D.S., and J. C. BRYANT, D.D.S., Glen Lake Sanatorium, Oak Terrace

Tuberculosis School Surveys

H. LONGSTREET TAYLOR FOUNDATION, Pokegama Sanatorium, Pokegama

University of Minnesota

Benign Tumors of the Stomach

L. G. RIGLER and L. G. ERICKSEN

Chest Development, Models Showing Normal and Abnormal

S. A. WEISMAN

Contrast Media in Roentgen Diagnosis

L. G. RIGLER

Diphtheria Prevention, Progress in

RUTH E. BOYNTON, Student's Health Service

Hay Fever Causes for Minnesota

R. V. ELLIS, C. O. ROSENDAHL, Ph.D., and A. O. DAHL, M.S.

Tularemia in Man and Animals

R. G. GREEN

Varicose Veins and Ulcers

H. W. FROELICH AND STAFF, Minneapolis General Hospital

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for June

The Minnesota State Medical Association Morning Health Service.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

June 4—Your Heart.

June 11—Chorea.

June 18—As We Grow Older.

June 25—Vacation Time.

(Watch for probable change of time.)

Mississippi Valley Medical Society

A new medical organization to be known as the Mississippi Valley Medical Society was formally organized at Quincy, Illinois, on April 8. The sole purpose of the new society is to hold an annual meeting each fall devoted to intensive postgraduate instruction and conducted by the leading clinical teachers of the United States. The programs will be eminently practical and of particular interest to the general practitioner.

The society will especially appeal to the physicians

of Illinois, Missouri, and Iowa, and the annual meetings will be held in cities on the Mississippi River in these states. The first meeting will be held in Quincy during the month of October or November and will be a three-day session. The society has already been approved by the Adams County Medical Society of Illinois (Quincy), and the Marion-Ralls County Medical Society of Missouri (Hannibal).

The control of the organization is in the hands of a Board of Directors, consisting of one director to each 1,000 physicians in the states of Illinois, Missouri, and Iowa. The officers elected to serve for 1935 are: President, Dr. Walter Stevenson, Quincy, Ill.; president-elect, Dr. H. B. Goodrich, Hannibal, Mo.; first vice president, Dr. H. P. Coleman, Canton, Ill.; second vice president, Dr. E. A. Cunningham, Louisiana, Mo.; third vice president, Dr. Wm. Rankin, Keokuk, Iowa; secretary-treasurer, Dr. Harold Swanberg, Quincy, Ill.

An Advisory Committee including the following prominent physicians has been elected by the Board of Directors: Dr. Walter Bierring, Des Moines, president of the American Medical Association; Dr. Allen Pusey, Dr. A. D. Bevan and Dr. Malcolm Harris, Chicago, past presidents of the American Medical Association; Dr. Charles B. Reed, Chicago, president-elect of the Illinois State Medical Society; Dr. E. Lee Miller, Kansas City, president-elect of the Missouri State Medical Society; Dr. Thomas A. Burcham, Des Moines, president-elect of the Iowa State Medical Society.

Membership in the society will be open to all ethical physicians, it being a prerequisite that all members hold membership in their respective state medical societies. In order to get started quickly, the Board of Directors has elected to place the membership fee and dues for the first year at only \$3.00 and life membership at \$25.00, provided these are paid before the time of the annual meeting. Charter membership will close July 1, 1935. Members will attend the annual meetings without payment of a registration fee.

The Board of Directors is desirous of securing one thousand physicians as charter members in order to provide a caliber of program at the Quincy meeting that has never been equalled in this section of the Mississippi Valley. Ethical physicians interested in the new organization are urged to communicate with Harold Swanberg, M.D., secretary-treasurer, 211-224 W. C. U. Bldg., Quincy, Illinois.

Great Northern Railway Surgeons' Association

The Association will hold its 1935 meeting at Many Glacier Hotel, Glacier Park, Montana, Monday and Tuesday, July 1 and 2. Dr. Douglas Corsan of Fernie, B. C., is president of the Association. The program for the meeting will be as follows:

Monday, July 1, 1935

9 o'clock A. M.

The Emergency Treatment of Fractures

Moving Pictures made under the direction of

Dr. Charles L. Scudder, Massachusetts General Hospital, Boston, Massachusetts.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

The Treatment of Spinal Cord Injuries

Dr. Loyal Davis, Professor of Surgery, Northwestern University Medical School, Chicago, Ill.

Fracture of the Surgical Neck of the Humerus

Dr. F. J. Savage, St. Paul, Minn.

The Treatment of Injuries of the Hand

Dr. Sumner L. Koch, Associate Professor of Surgery, Northwestern University Medical School, Chicago, Ill.

The Management of the Diabetic Railway Employee

Dr. A. E. Cardle, Director of the Diabetic Out-Patient Clinic, Minneapolis General Hospital, Minneapolis, Minn.

Malpractice Law Suits

Dr. B. J. Branton, Willmar, Minn.

Tuesday, July 2, 1935

9 o'clock A. M.

Alleged Sacroiliac Strains

Dr. L. J. Stauffer, Priest River, Idaho.

Some Aspects of Major Infections of the Hand

Dr. Sumner L. Koch, Chicago, Ill.

Traumatic Detachment of the Retina

(With Motion Pictures)

Dr. Charles N. Spratt, Minneapolis, Minn.

Dislocations of the Knee Joint; Report of Two Cases

Dr. R. B. Richardson, Great Falls, Mont.

Septic Arthritis of the Knee Joint

Dr. John G. Cunningham, Spokane, Wash.

Trauma and the Malignant Testis

Dr. A. N. Collins, Duluth, Minn.

Redwood-Brown County

The annual meeting of the Redwood-Brown Medical Society was held at the Dakota House, New Ulm, Wednesday evening, May 15, 1935, with twenty-seven members of the society present.

A banquet at 6:45 p. m., including the Ladies' Auxiliary, was followed by an interesting program. Dr. William Peyton gave a talk on "Carcinoma of the Jaw and Antrum." Dr. R. W. Morse spoke on "Gastro-intestinal Diseases." F. Manley Brist gave a review of recent medical legislation.

The following officers were elected to serve the ensuing year: President, A. P. Goblirsch; vice president, C. A. Saffert; secretary-treasurer, Carl Fritzsche. Dr. J. H. Vogel was elected delegate for 1936.

Rice County

A meeting of the Rice County Medical Society was held at Laird Hall, Carleton College, Northfield, Minnesota, April 26, under the sponsorship of Dr. Neil S. Dungay.

Dr. L. F. Hawkinson, Brainerd Clinic, gave an interesting talk on "Endocrinology."

June, 1935

St. Louis County

The regular monthly meeting of the St. Louis County Medical Society was held May 9 at Nopeming Sanatorium. The following program was arranged by the Sanatorium staff: 5:30 p. m., ward visits; 6:30, supper; 7:30, meeting. The scientific program included "Some End Results of Phrenic Neurectomy," Dr. J. G. Lamont, former superintendent of the North Dakota State Sanatorium; "Analysis of 2,000 Sedimentation Tests," Dr. G. A. Hedberg; "Animal Inoculation as an Aid to the Diagnosis and Treatment of Pulmonary Tuberculosis," Dr. David F. Loewen, post-graduate Resident, formerly of Trudeau Sanatorium; "Early Clinical Tuberculosis in Hospital and Sanatorium Employees," Dr. A. T. Laird.

Scott-Carver County

The Scott-Carver Medical Society meeting was held May 14 at Belle Plaine. Mr. M. F. Brist of St. Paul and D. W. Wilson, D.D.S., Chairman of the Legislative Committee of the Minnesota State Dental Association, spoke on Medical Economics. A meeting of the advisory committee took place before dinner served at 6:30.

Upper Mississippi Valley

On April 27, twenty-three Duluth doctors joined with the members of the Upper Mississippi Valley Society for an afternoon and evening meeting at Aitkin. Twenty-three other cities outside of Duluth were represented, and addresses were made, Dr. B. J. Branton of Willmar and Dr. Herman Johnson representing the State Medical Society. Dr. George Berdez and his associates from Duluth brought to the meeting a varied and interesting pathologic museum, and the cases represented were widely discussed by all present.

Washington County

At the meeting of the Washington County Medical Society May 4, a "Mantoux Test" for all children in the county was discussed and it was decided to perfect plans to carry out the testing. A report on immunization was given showing that children over twelve years of age were given the Schick test with reactors to be given two toxoid treatments three weeks apart, while children under twelve were given one full dose of toxoid (alum precipitate). Dr. Carnot Sherman of Oakes, N. D., formerly of Bayport, Minnesota, was a guest at the meeting. He spoke on conditions in North Dakota, expressing the belief that doctors should do their own charging and should be organized to act in self defense against organizations croaching on the rights of the doctor.

PROCEEDINGS of the MINNESOTA ACADEMY OF MEDICINE

Meeting of March 13, 1935

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 13, 1935. The President, Dr. A. R. Hall, in the Chair.

The meeting was called to order at 8 p. m. There were forty-six members and two guests present.

Minutes of the February meeting were read and approved.

Upon ballot, Dr. Thomas S. Roberts, of Minneapolis, was elected vice president of the Academy for 1935, in place of Dr. Butler, who had resigned.

The scientific program followed.

THE CONGENITAL CLEFTS OF THE FACE AND JAWS

HARRY P. RITCHIE, M.D.
Saint Paul

Dr. Ritchie's paper, was illustrated with numerous lantern slides of cases, showing conditions both before and after operative procedures.

Discussion

DR. CARL W. WALDRON (Minneapolis) (by invitation): I certainly appreciate the opportunity to be here tonight to hear Dr. Ritchie. I have had the pleasure of working with him for several years, and more and more I am convinced that we are proceeding along fundamental lines. This is well illustrated by his method of approach to the subject of lip and palate repair. I feel that the surgical problems of the repair of these congenital defects are being thought out better by the surgeons of the country and that we are going to make much more progress in the next thirty or forty years than we have in the past. I think this progress will be based on the fundamental viewpoint that Dr. Ritchie has given us tonight. We see cases of frightful adult deformities due to lack of appreciation of the embryological and physiological considerations which Dr. Ritchie has just presented. Up to ten or fifteen years ago the problem was either approached from a cosmetic standpoint or too much attention was given to the bony foundation in so far as the maxilla was concerned. Many of the patients were operated upon with the best of intentions, the operation, however, being performed at much too early an age. We have still to contend with the old ideas of some surgeons that speech is well developed during the first year of life. These surgeons consequently thought that the soft palate must be sutured before nine months of age. This resulted of course in the sutures pulling away on account of undue tension, with a resulting gross deformity that could not be repaired surgically at a later date.

The muscle theory of the lip repair, as stressed by Dr. Ritchie for many years, is, I am sure, fundamental to the proper functioning of the lip. There have been

certain problems with respect to the reconstruction of the floor of the nose that have made surgeons think out certain procedures. These primarily were of a purely plastic type, but we found that to make the part look right we should bring the muscles together correctly from the anatomic standpoint.

For several years I have used the modified Mirault procedure, though not quite as Dr. Blair has advocated. He elevates and turns skin flaps that include muscle. By undercutting, these skin flaps can be turned and still leave the large muscle bundle on either side for direct approximation and suture. In this procedure a small inverted V-shaped portion of skin from the short side of the lip is sewn down below the anterior margin but fundamentally it makes such a lip as Dr. Ritchie has described. I am convinced that with the thought and care we are now giving these cases, the surgical catastrophes we now see in adult cases will not be seen ten or fifteen years hence.

However, we still have plenty of problems. The matter of efficient dental occlusion and the satisfactory development of the facial profile are examples. After we try to get these taken care of, we still have the bugbear of imperfect speech to consider. I think the surgical lengthening of the palate and the improved functional closing of the nasopharynx is something that holds out a lot of promise. I agree with Dr. Ritchie, it is not a primary procedure.

It is a pleasure to have heard Dr. Ritchie tonight.

A CONTRIBUTION TO OUR UNDERSTANDING OF THE MECHANISM OF HYPERTENSIVE ENCEPHALOPATHY AND THEIR TREATMENT IN A CERTAIN GROUP OF THESE CASES

GEORGE FAHR, M.D.
Minneapolis

Discussion

DR. J. F. CORBETT (Minneapolis): I would like to thank Dr. Fahr for his most excellent paper and his treatment of the whole subject. This brings to mind two cases of mine where subtemporal decompressions were done. One of these was a man about 40 years old. There was no very marked degree of hypertension and, aside from that, the symptoms and signs were the same as those described by Dr. Fahr. My diagnosis, I must confess, was wrong. We thought we were dealing with brain tumor. I did a decompression. When I opened the dura and saw this flood of fluid coming, I discontinued any further operative procedure and awaited the result of the decompression. In a short time the other symptoms disappeared and the individual recovered to practically normal health. In this case there

was even partial paralysis of one of the limbs. I watched that man for a long period of time. He remained in health, to my knowledge, for ten years. A short time ago I happened to see him in Northwestern Hospital where he is being treated for some kidney condition.

The other patient was a much younger individual who I also thought had brain tumor, but, in making the drill hole, I accidentally nicked the dura and had a flood of cerebrospinal fluid. That was four years ago. I saw that patient in the office the other day and there is no return of symptoms. That case did not have high blood pressure either.

This thing has been defined by Cushing as serous meningitis, and I placed these two cases under that heading. In two cases I have seen instances of "wet brain." One alcoholic had a wet brain with enormous amount of fluid. He got well but I lost track of him. The other case was a boy who sustained a severe fracture of the femur and was given ether for a long time. Soon after that he became paralyzed on one side. I was sure of the diagnosis of subdural hemorrhage. I went in but could not find anything outside of the dura. In that case I found an enormous amount of cerebrospinal fluid. Those four cases are cases of serous meningitis. Two remained practically well; one I don't know anything about; and the other died soon after the decompression.

DR. GEORGE N. RUHBERG (Saint Paul): The studies of Fremont Smith and others have definitely shown that the spinal fluid is a transudate from the capillaries of the choroid plexus. The rate of formation is in direct relation to the venous pressure, which probably explains why, in some cases of hypertension, no increase in spinal fluid takes place, and in others it does. Any factor tending to increase venous pressure will, therefore, bring this about. I would ask, if Dr. Fahr, in his study of these cases, did not find this to be true?

DR. JOHN BROWN (Saint Paul): I would like to ask Dr. Fahr for his differentiation between this and brain tumor.

DR. MOSES BARRON (Minneapolis): One does not know what is going to be left for the internist, with the surgeons coming in and finding that they can operate now for heart disease, for hypertension, and similar conditions. Hypertensive encephalopathy is a very interesting condition. Unfortunately it is very complicated and its mechanism is little understood. Dr. Fahr stated that the operation on the first case was better than the second one, but he did not state why it was better. Thus encephalopathy occurs both with essential hypertension and in acute and chronic glomerulonephritis. In nephritis, one, of course, always has to consider the possibility of a true uremia. The use of operation for this condition will prove very limited in scope, since I believe that the symptoms are not always produced by an increase in the amount of the spinal fluid. Many cases come to autopsy in which there is no increase in the amount of spinal fluid, though there is an increase in the brain pressure, and thus, also, in the spinal fluid pressure. The second case reported gave only 7 c.c. of fluid, which illustrates this point.

The mechanism may be visualized somewhat like this: at first there is an increase in blood pressure, this causes an increase in pressure in the cerebral vessels. There is a poor vasomotor control there. The increased flow of blood in the capillaries under an increased pressure causes an escape of fluid into the brain tissues. It probably results in an intracellular as well as an intercellular edema. At autopsy the brain often appears under great pressure but the surface is dry. The symptoms therefore are the result of the ischemia resulting from the increased pressure.

I recall a case in point of a man who developed convulsions. I found him in bed with complete paralysis of his left arm and hand. As I started to get the sphygmomanometer and to place the cuff around his arm, he suddenly began to move his arm normally and the paralysis just as suddenly disappeared. While talking with him the paralysis again developed and, after a while, just as promptly disappeared. Through rest in bed and other measures the patient was comfortable for a month and then one morning he developed a true hemiplegia.

The ischemia in the brain, resulting from spasms in the blood vessels, plus the increased cerebral pressure may cause a weakening of the distal part of certain blood vessels so that when the blood starts flowing again the vessels, having become weakened, may rupture and the cerebral hemorrhage obtain.

It is my opinion, therefore, that only a few cases of this type can be subjected to this type of operation—those with an increased cerebral spinal fluid. My surgical friends, therefore, should not become over-sanguine about the operation on this type of case.

DR. FAHR (in closing): It is very nice to get discussions from the surgeons because they are so very clear on certain things and stick to the point at issue. Dr. Corbett has given me considerable enlightenment on this problem. I liked to hear Dr. Corbett's description of this flood of subarachnoid fluid coming out—this "wet brain." You can't get some of the pathologists to call it a "wet brain," but this is a good way to get around the pathologist.

It was not an intensely high blood pressure that Dr. Corbett measured in the young girl who probably had an acute nephritis. The interesting thing about it is that they will go along for some time with a moderately high blood pressure and then up will go the blood pressure to higher values; they get blind, or vomiting begins, or convulsions start. Then if something like magnesium sulphate is given, that will bring the blood pressure down, these symptoms will disappear. I am not at all surprised that there was not a very high blood pressure at the time Dr. Corbett took it, but there probably was at the time the convulsions were present. In our cases when we got the blood pressure down, the symptoms disappeared. When the blood pressure went up, the symptoms returned. I venture that, at the time of the convulsions, you would have found the blood pressure around 200.

In reply to Dr. Ruhberg, quoting the man in Boston as saying that the "cerebrospinal pressure is proportionate to the venous pressure," I would state that if

WOMAN'S AUXILIARY

you raise the venous pressure you always raise the capillary pressure and the capillary pressure probably determines the rate of ultrafiltration and formation of cerebrospinal fluid. If vasomotor control of the lumen of the small arteries is lost, capillary pressure must rise in high blood pressure.

Dr. Brown wanted to know how we differentiate this from brain tumors. Well, that is a difficult thing. Bramwell fell down on the diagnosis in his case. They thought it was a brain abscess and it was what they called uremia. The only criterion I know of is the retinal arteriosclerosis found in cases of primary hypertension, or a knowledge of a previous history of high blood pressure, or urine and kidney function studies. The urine examination may help; kidney function studies may also help in the differential diagnosis.

In regard to Dr. Barron's discussion, I did not say that all cases of hypertensive encephalopathy are due to increased brain pressure. I said in a special group of cases, which I thought I carefully defined, this was probably the mechanism.

The meeting adjourned.

R. T. LA VAKE, M.D.
Secretary.

WOMAN'S AUXILIARY

President—MRS. MARTIN NORDLAND, Minneapolis
Editor—MRS. C. F. EWING, Wheaton

Mower County

The Women's Auxiliary to the Mower County Medical Society held its regular monthly meeting March 25, 1935, at St. Olaf Hospital with seven members present. Mrs. Hertel, the president, appointed the following committees for the year: Program, Mrs. J. G. W. Havens and Mrs. L. Flanagan; Sewing, Mrs. A. W. Allen and Mrs. O. H. Hegge; Finance, Mrs. P. A. Robertson; Hygeia, Mrs. Paul Leck; and Social, Mrs. J. K. McKenna, Mrs. W. B. Grise and Mrs. A. W. Allen. After the business session, refreshments were served by Miss Rost. The remainder of the afternoon was spent in folding surgical dressings for the hospital.

The Auxiliary spent the afternoon of April 22 at the hospital, ten members being present. Following a business session light refreshments were served by the nurses.

A one o'clock luncheon was enjoyed by members of the Auxiliary May 27, at the Austin Country Club. Thirteen members and guests were seated at the table

and were served an appetizing luncheon by the club cateress, Mrs. Knudson. During the business meeting, presided over by the president of the auxiliary, plans were made by members for the purchase of an oxygen tank for the hospital. The remainder of the afternoon was spent in folding surgical dressings for the hospital.

Olmsted-Houston-Fillmore-Dodge Counties

A dinner and scientific program marked the meeting May 7 of Olmsted-Houston-Fillmore-Dodge County Medical Society at the Rochester State Hospital. The meeting was held in conjunction with the Auxiliary society. Following the dinner, the Auxiliary elected the following officers: Mrs. G. B. Eusterman, Rochester, president; Mrs. C. E. Bigelow, Dodge Center, vice president; Mrs. B. F. Smith, Rochester, secretary-treasurer.

Mrs. Smith has transferred from the Kandiyohi-Swift-Meeker medical auxiliary.

Retiring officers are Mrs. F. P. Moersch, president; Mrs. Eusterman, vice president, and Mrs. F. C. Dolder of Eyota, secretary-treasurer.

For the program, Dr. H. C. Hinshaw presented an illustrated lecture on Beirut, Syria and Egypt.

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Renville County

At the annual election of officers of the Renville County Medical Auxiliary at Olivia, Minnesota, May 7, the following officers were elected: Mrs. R. S. Madland, Fairfax, president; Mrs. R. C. Adams, Bird Island, vice president; Mrs. R. E. Billings, Franklin, secretary-treasurer.

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Scott-Carver County

The Woman's Auxiliary to the Scott-Carver Medical Society held a luncheon meeting at Mudcura Sanitarium, Shakopee, Tuesday, May 7. Dr. J. A. Watson gave an excellent talk on "Socialization of Medicine." The State president, Mrs. Martin Nordland of Minneapolis, spoke on "The Purpose of the Auxiliary," and Mrs. James Blake of Hopkins, and Mrs. S. S. Hesselgrave of St. Paul, talked about the work being done by the organization. Dentists' wives of Scott and Carver Counties and officers of the League of Women Voters were guests of the Auxiliary. After the meeting, which was presided over by Mrs. H. E. Wunder, a get-acquainted hour was enjoyed at the home of Mrs. H. P. Fischer.

TRANSACTIONS of the MINNEAPOLIS SURGICAL SOCIETY

ANNUAL SYMPOSIUM ON CANCER

THURSDAY, APRIL 4, 1935

The President, DR. MARTIN NORDLAND, in the Chair

Dr. Martin Nordland, President: Before introducing the chairman in charge of the meeting tonight, I want to make a few remarks with reference to the purpose of the Minneapolis Surgical Society devoting one meeting each year to the subject of cancer.

It is the plan of the State Committee on Cancer to encourage every medical organization in the state to hold at least one meeting each year for the discussion of the problem of malignancy.

The object of this plan is to impress upon the medical practitioner and indirectly upon the public the fact that cancer is curable by the use of well known and established methods of treatment; to point out in a convincing manner that if all cases of cancer could be diagnosed early and treated promptly in their incipency, the annual death rate from the disease, now recorded as 150,000 in the United States and Canada, would be reduced by 33 per cent or 50,000 per year. It has been stated that the average patient with carcinoma has delayed consultation with his physician seven months after suggestive symptoms have developed and that the physician has on the average delayed two months before beginning treatment. The object is, further, to convince the profession and the public that, even though cancer may be in the later stages, palliative measures may bring relief of distressing symptoms, and proper treatment arrest progress and frequently result in cure. Another purpose is, finally, to discourage the cancer phobia that now exists in the minds of the profession and public and establish that cancer is curable.

Dr. Bulkley, past president, has worked on this program, he has spent a good deal of time arranging it, and will conduct the meeting and call on the speakers in their turn. It is my pleasure now to turn the meeting over to Dr. Bulkley, Chairman for the evening.

Dr. Kenneth Bulkley, Chairman: Mr. President, members of the Surgical Society, and guests. I regret that the weather tonight is so inclement as it has had an effect of markedly reducing our attendance. May I take this opportunity first of stating that the Minneapolis Surgical Society meets on the first Thursday of each month during the winter in the lounge of the Hennepin County Medical Society and that these meetings are open to the medical profession. We try to start promptly at 8:00 p. m. and adjourn at 10:00 p. m. The courtesy of the floor is commonly extended to visitors who may wish to discuss any of the cases or papers presented.

It has been the custom of the Surgical Society, since it was founded, to have two standing committees, one of which is made responsible for an annual meeting on fractures and the other made responsible for an annual meeting on malignancy. Last year I happened to be the presiding officer and Dr. J. F. Corbett served in the position in which I find myself this evening. A year ago our meeting on malignancy was largely statistical and informative in character. We showed then quite conclusively that the vast majority of cases of malignancy in Minneapolis were not cared for by public institutions but were cared for by the general run of practitioners. Consequently, the meeting was devoted chiefly to the occurrence of cancer in private practice in Minneapolis and the available means of treatment.

This year we have somewhat revised our program and will present to you a series of individual papers on various aspects of the cancer problem. These papers have all been contributed by members of this Society and every member was given an opportunity to submit a title. From this list of titles your program committee selected the papers which will be presented tonight.

I shall now call on Dr. Baxter, our first speaker of the evening.

MELANOMA

S. H. Baxter, M.D.

The study of cancer reveals numerous instances illustrating the contradictory behavior in different individuals of tumors which, by all the tests now at our command, are almost exactly alike. This has been a frequent observation, and probably indicates that there is some difference in the individuals harboring these tumors which is too profound to be explained by the mere differences in the morphology of the tumors.

To illustrate this point, and to preface a brief discussion of melanomas, two cases are cited:

Case 1.—Mrs. Z., aged thirty-five, came to Hill Crest Hospital in October, 1920. About six months previously she had noticed a small growth in the skin of the left side of the neck. It seemed to be under the skin, there were no subjective symptoms, and the patient paid no attention to it until it began to grow. It was removed elsewhere in August, 1920, and was pronounced a "carcinoma which looked something like a melano-epithelioma." Several treatments were given with x-rays. About two months later a lymphatic gland in the left side of the neck began to enlarge. This gland was removed by operation and a radium capsule left in the wound. This tissue showed the effect of the x-ray treatments, but contained groups of carcinoma cells. Within a few weeks another lymph gland deep in the neck began to enlarge, and in March,

1921, a tumor the size of a small hen's egg was removed from beneath the left sternomastoid muscle. It was readily separated from the carotid sheath, but was intimately attached to the sterno-mastoid muscle, so that it was necessary to excise a part of the muscle with the tumor. A radium capsule was buried in the wound. The microscopic sections of this tumor showed a malignant melanoma with mitotic figures in some of the cells. There has been no recurrence and the patient is now living and well.

Case 2.—Mrs. R., aged thirty. In 1919 a mole was removed from the left side of the vulva between the labia. In May, 1920, the patient noticed a swelling in the left groin, which her physician regarded as an enlarged gland from an infected toe. In January, 1921, this gland was excised with a wide margin of the surrounding tissue and 90 mgm. of radium were left in the wound. Sections of the original tumor were then examined by different pathologists who gave varied opinions regarding its nature. Dr. Ewing expressing the opinion that it was definitely malignant. A generalized melanosis soon developed, and death ensued in a few months.

It is impossible, in the present state of our knowledge to explain why these two cases, of apparently equal degree of malignancy, should behave so differently. In this difference in behavior, possibly, lies the key to the solution of the cancer problem. "The variations in pigment offer a very delicate indication of the functional activity of the cells and a unique opportunity to trace the relation between functional activity and the growth capacity of the tumor cells." (Ewing)

Melanin is found very extensively in nature both in plants and in animals. It is autochthonous in the tissues in which it is found, being elaborated by the cells themselves through the action of an enzyme. It is not produced from blood pigment or hemoglobin or any other pigment brought to the cells by the circulating media, but its elaboration is a specific function of certain cells. In the vegetable kingdom a familiar example of the production of this pigment is found in the brown discoloration of the cut surface of an apple, which is the result of the action of an oxydase upon the chromogen in the cells. The juices of certain Japanese plants are changed by a similar process into the black dye that is used in lacquer.

A striking example among invertebrate animals is found in the ink-sac of the cuttle-fish. The black pigment produced by some fungi, e.g., the inky-cap mushroom, is similar in origin and in composition to that produced in melanotic tumors. In the horse a condition is found which has not been observed in man, that of a diffuse melanosis, and, strange to say, it affects only white or grey horses, not dark-colored ones. The pigment in the skin of the chameleon is controlled in a most extraordinary manner, to enable the animal to change its color to lighter or darker shades according to the color of its surroundings. The pigment granules are found in the branched cells of the corium of the skin. These cells are under nervous control and when the granules are scattered throughout the cells, the skin is dark; when they are concentrated in the center of the cell, the skin is light-colored. This nervous mechanism is probably not volitional, but

sympathetic or automatic, and is set in motion by various external stimuli and possibly by the action of light on the retina.

Melanin, therefore, and melanin-forming cells are found normally throughout all living tissues, both vegetable and animal, and the absence of it, as in albinism, may constitute an abnormality. All degrees of variation in pigmentation are found in normal tissues under various conditions. The bathing beaches in summer offer striking examples of the effect of sunlight in stimulating the deposit of melanin in the skin. There is a physiologic increase in pigmentation in pregnant women—*chloasma uterinum*—which is most marked in the areolae of the breasts, but affects other areas of the skin also. This effect is most marked in brunettes. Some cases of exophthalmic goiter show a similar increase in the pigmentation of the skin.

In the fetus of both dark-skinned and white-skinned races, the basal cells of the Malpighian layer contain pigment. In the white races, most of these cells become depigmented by disuse, but some cells remain as potential melanoblasts which manifest themselves in the form of freckles or bronzing of the skin under the influence of actinic light rays.

Melanin is assumed to be preceded by a colorless substance, melanogen or chromogen, a protein body which is closely related to tyrosin and which, by the action of an enzyme in the adrenal gland is converted into adrenalin. This melanogen, or mother-substance, may also be converted into melanin or brown pigment by the action of the specific ferment or oxydase which is produced by the melanoblasts in the Malpighian layer of the skin. When there is absence of the enzyme in the melanoblast, then no melanin is formed from the colorless mother-substance, and we have the condition of albinism. On the other hand, in Addison's disease it is presumed that the disease of the adrenal prevents the normal conversion of the mother-substance or melanogen into adrenalin, so that there is an excess of this substance in the circulation and it is converted into melanin by the specific ferment in the melanoblasts of the skin. Under conditions of disease, the production of melanin is enormously increased. It has been estimated that there is only about one gram of melanin in the entire skin of a negro, but three hundred grams have been extracted from a melanotic tumor of the liver.

The consideration of the origin and structure of melanomas would take us into a field of speculation which is beyond the scope of this discussion. Whether melano-carcinoma, melano-sarcoma, melano-endothelioma, etc., have a common origin in the germinal layer of the skin, or whether they have varied origins is a question on which there is much disagreement, and for our present purpose, is largely of academic interest. Ewing sums the matter up in these words: "Theoretical considerations favor the origin of the melanomas from the mesoblastic chromatophore, and histological considerations favor the origin from epithelial cells which have taken on pigmentary functions: The established tumors are sarcomatous or carcinomatous in structure or both."

From the normal, diffuse deposits of melanin, we now pass to a consideration of the localized concentrations of pigment which merge, by gradual degrees from quiescent moles which are so common as almost to be regarded as normal, into the group of highly malignant melanomas. Pigmented moles are very common malformations of the skin. The characteristic feature of the pigmented mole is the presence underneath the epidermis of nests of cells of fairly large size, polygonal in shape and containing brown pigment. They are congenial in children and represent areas of faulty development of the skin. Some authors think that they are congenital in adults also. The specific cells are peculiar not only to the moles, but to the skin generally; to the choroid coat of the eye, where they are most abundant; to the arachnoid covering of the brain and spinal cord, and to some extent to mucous membranes.

Adami questions whether pigmented moles should be regarded as definite tumors because, though to the naked eye they appear sharply defined, under the microscope their connective tissue stroma merges imperceptibly into the surrounding tissue. He regards them as an excessive development of a constituent of normal skin which, for some reason, has taken on the active elaboration of pigment.

Associated with pigmented nevi and melanomas, by a curious and unexplained relationship, are groups of tumors made up of cells originating in nervous tissue. A plexiform neuroma may be found underlying a melanoma. Molluscum fibrosum and localized neuromata are related growths and frequently contain pigmented areas. Von Recklinghausen's disease is the most remarkable example of this group of tumors. One reported case of this disease presented a "veritable eruption" of tumors all over the body following an injury to a single tumor over the shoulder-blade. The tumors of Von Recklinghausen's disease frequently contain melanin. A specimen of a metastatic melanoma in the liver was made up of triangular cells with large nuclei "resembling cells of the central nervous system."

Further suggestion of the association of nevi with the nervous system is found in the so-called "systematized nevi" which seem to follow the facial clefts or Voigt's lines, or the distribution of the peripheral nerves. In a case which came under our observation recently, in which there were almost universal metastases from a malignant melanoma, there was a chain of secondary tumors, one tumor over each rib.

"It cannot be definitely stated what kinds of moles are likely to become malignant," according to E. T. Bell. Nevertheless, it seems worth while to try to make some distinctions between different kinds of moles. Whether one should draw a distinction between congenital moles and those first appearing in adult life is open to question, because it is quite probable that the malformation in the skin responsible for the later development of the mole was present from birth. Probably 90 per cent of people have moles in the skin and since malignant melanomas are

not numerous, it would appear that the incidence of these tumors is not disproportionately large, compared with the incidence of other forms of malignancy. Of malignant melanomas of the skin, about 50 per cent develop from moles that have been present from birth, the rest from moles that first appear in adult life. Primary melanomas of mucous membrane are very rare, the recorded cases having been of tumors of the hard palate. One is reminded here of the black pigmentation of the roof of the mouth in dogs. The commonest site or origin of melanoma is the uveal tract. Melanoma of the choroid is ten times more frequent than melanoma of the ciliary body, and melanoma of the iris is very rare. Melanomas of the nail-fold of the toes, and melanomas originating in the skin of the feet after some injury deserve mention. They are highly malignant and free excision, with radium treatment, offers the best chance of cure.

Of the cutaneous nevi, two classes may be distinguished: (a) the "soft nevi," which contain the characteristic nevus cells, have been regarded as arising from the basal cells of the rete Malpighii, whose function is potentially melanoblastic; (b) "hard nevi" have been regarded as arising from the other layers of the rete and are pigmented only secondarily; their cells have already begun to differentiate along the line that will eventually lead to squamous epithelium; these hard nevi are essentially papillomata with the addition of pigment and when they become malignant they form squamous epitheliomata. It is rare for the acanthotic, hard nevi to become malignant; the corium is not invaded by strands of epithelial cells. But when malignancy does commence, then individual cells and strands of cells break away from the germinal layer, just as in true squamous epithelioma. In the study of melanoma by Dawson, only one out of thirty-seven such pigmented nevi, many of which were large and ulcerated, showed any indication of malignancy.

A melanoma which has become malignant and is increasing in size will often show an advancing zone of vascularity and soon form a hemorrhagic nodule. There will be an increase of pigmentation which merges gradually into the normal skin. The tracing of the transition from a benign to a malignant melanoma shows that the change is essentially one of an infiltrating growth which spreads by direct extension, by lymphatic channels and by blood vessels. The original tumor does not often attain any great size, but the secondary growths may be exceedingly numerous, involving all the viscera. The liver is the favorite site for large secondary growths. The muscles usually show little involvement. Histologically, increased cytoplasm, and hyperchromatic nuclei and mitoses are evidences of malignancy, but the amount of pigment present is no guide to the degree of malignancy.

The spleen is almost never involved by metastases. The reason for this is not apparent. Research is now being conducted in an attempt to explain this immunity of the spleen from these tumors. If this explanation can be found, it may throw some light on the problem of the genesis of malignant growths.

From the standpoint of prognosis, the two cases cited in this paper illustrate one of the conspicuous differences in the behavior of these tumors. In one case, metastasis was into the regional lymph glands and persistent attack resulted in a cure. In the other case the metastases were universally disseminated through the blood stream, and the prognosis was hopeless.

Since we have at the present time no sure way of distinguishing between a mole which will remain benign and one which will become malignant, the wise course, theoretically, would be either not to disturb a mole by any kind of treatment, or to treat it as though it was known to be malignant. As has been stated above, the acanthotic, or hard nevi, are papillomata rather than true melanotic nevi, and it is probably moles of this class that have been successfully treated by the electric needle, fulguration or electro-coagulation, without recurrences or metastases. But even these moles occasionally become malignant, and the indiscriminate use of the electric needle on moles of any kind is to be condemned. Amadon reported twenty-seven cases treated by electro-coagulation, all of which had local recurrences and metastases to lymph glands within a few months. This was apparently caused by the forcing of tumor cells or of melanin into the blood and lymph channels by pressure of gas or steam generated in the tissues by the electric current. If a pigmented nevus is to be treated at all, it should be excised with a liberal margin of healthy tissue. Then, if the microscopic examination of the tumor shows that it is malignant, the regional lymph glands should be removed and a radium capsule left in the wound. Even if the nevus, after its removal, is found to be of doubtful malignancy, prophylactic irradiation of the site of the nevus and of the regional lymphatic glands may prevent a recurrence or metastasis. Recurrences, although they may give a very discouraging outlook, will, when persistently followed up, sometimes result in the unexpected cures, as in Case I, reported herewith.

Finally, let us not forget that many patients afflicted with malignant disease cannot be cured by any means that we now possess. Therefore, a cure is not the sole object of treatment. A patient with an incurable disease is in more dire need of treatment than one who is on the high road to recovery. He needs all the physical aids that can be brought for his relief and assistance. He needs moral support. He needs the assurance that he will not be abandoned because his case is hopeless, and that his physician has not lost interest in him because a cure cannot be effected.

MALIGNANT TUMORS OF THE THYROID GLAND

Martin Nordland, M.D.

Malignant tumors of the thyroid gland are not extremely rare when one considers the numerous statistical studies showing from 1 to 3 per cent of all nodular growths in this gland to be carcinomata. However, it is only rarely that this type of malignancy is diagnosed preoperatively since only a small single

area in a benign nodule is involved early in the disease. On the contrary, when there is a hard fixed tumor, hoarseness, dyspnea, and immovable vocal cords, the nature of the condition is obvious. By this time metastases are likely to be extensive; in fact they often occur so early in the disease that their origin may be obscured.

Carcinoma

Considerable confusion exists concerning the histological classification of thyroid cancer. The classification should be simple to be of value in the clinical management. Pemberton, in his classification, divides malignancy of the thyroid into three clinical groups. This classification is simple and of considerable help in the clinical management. He divides carcinoma of the thyroid into: (1) papillary adenocarcinoma; (2) malignant adenomata; and (3) diffuse growths of the scirrhus type including a few of the spindle-cell variety. The microscopic diagnosis of malignancy in the thyroid is not always easy even for the trained pathologist since there is a great diversity of histologic features as well as a marked similarity to benign conditions. However, actual invasion by the neoplastic cells of the blood vessels, if found, is a reliable criterion upon which to base a diagnosis of malignancy.

It is not surprising to note that metastasis takes place early in this disease when one considers the rich blood supply of the gland, its proximity to the lymphatics and large blood vessels. The incidence and extent of metastasis varies greatly with the type of lesion and the degree of malignancy, it being noteworthy that the papillary type of growth frequently shows late metastasis and then only to the regional nodes. Highly malignant lesions, such as spindle-cell varieties, are of rapid growth, produce early distant metastasis and usually prove to be speedily fatal. Therefore, in the treatment of this condition, both the factors of the extent of the growth and the histological structure of the lesion must be kept in mind.

The so-called classical symptoms of thyroid malignancy are those of the end stages of the disease and are not always characteristic. These patients are usually in the fifth and sixth decades of life and in most of the cases there is a history of pre-existing nodule or unilateral enlargement of the thyroid gland. A nodule such as this may suddenly enlarge, it usually becomes harder, more nodular and soon symptoms of tracheal compression or laryngeal involvement are present. Mediastinal or pulmonary extension may produce dyspnea but pain is frequently a late phenomenon. Pressure on the recurrent laryngeal nerve or direct extension of the growth into the trachea results in hoarseness and cough, and if the esophagus is encroached upon dysphagia is present. Hoarseness is a significant symptom, since it usually means that the tumor has broken through the capsule and that the nerve is actually invaded or pressed upon. These symptoms are rarely present until the condition is relatively hopeless.

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In the early stages of thyroid malignancy there are no symptoms that are positive and diagnostic. Suggestive symptoms and findings, however, are slow growth of a pre-existing adenoma, increasing firmness of the tumor, pressure sensation and lack of freedom of movement on palpation.

Differential Diagnosis

Clinically we must differentiate thyroid tumors from Riedel's type of chronic thyroiditis, tuberculosis, and sudden hemorrhage into an adenoma. In general, in non-malignant tumors of the thyroid, involvement of the recurrent laryngeal nerve is very rare. The question of the possibility of carcinomatous lesions of the thyroid producing hyperthyroidism has not been completely settled, although Pemberton states that this condition practically never takes place. When there is enlargement of the gland along with a condition of hyperthyroidism, the presence of malignancy is very rare, although in Pemberton's series, 87 per cent of the cases of malignancy were associated with benign nodules elsewhere in the gland. It is these benign adenomata which are most likely to cause hyperthyroidism.

In the differential diagnosis there are several conditions to be considered. The most noteworthy, although rare, is the so-called Riedel's struma or woody thyroiditis. The etiology of this disease has been variously ascribed to tuberculosis, lues, and other types of chronic inflammation, but no convincing evidence of any of these factors has been presented. In this disease the gland is so hard that its consistence has been described as stony or like that of iron. However, its contour is smooth and rounded, the normal shape of the gland is retained, there is no hoarseness, and there is little or no fixation of the gland to the surrounding structures. There is no evidence of extension to the regional nodes and distant organs. Malignant tumors are usually nodular and unilateral, they frequently metastasize early and soon involve the recurrent laryngeal nerves so that hoarseness and dyspnea are relatively common symptoms. The indications for surgical removal of the gland affected by woody thyroiditis consist mainly in pressure symptoms such as dyspnea and dysphagia. When surgery is undertaken for this disease it should, if possible, be limited to partial resection of the gland, since, as a rule, very little functioning gland tissue is left and myxedema may result. Late in the disease myxedema is common, but this may be controlled satisfactorily by the oral administration of thyroid gland extract.

Tuberculosis of the gland, while extremely rare and of little clinical importance, is occasionally confused with malignancy. It has been noted that tuberculosis occurs frequently in association with increased functional activity of the gland in contradistinction to malignancy which rarely invades a gland already involved with hyperthyroidism. The disease is most frequently a part of a generalized tuberculosis or secondary to an acid-fast infection elsewhere in the body; the result may either be a frank abscess formation or a chronically inflamed fibrotic mass. Micro-

scopically the latter type shows tubercles intra- or inter-follicular. The surgical treatment is incision of the abscess or lobectomy depending upon the condition encountered. The prognosis is excellent, according to Rankin and Graham. From their studies they could not conclusively determine whether the hypertrophic gland is rendered more susceptible to invasion by the bacillus of tuberculosis, or whether infection stimulates the parenchyma to abnormal activity resulting in hyperthyroidism.

Hemorrhage into a thyroid adenoma may produce a most confusing picture. The history, however, in most cases gives the correct diagnosis. The patients may or may not have previously noted a goiter. Suddenly, as a rule, following exertion, the adenoma of the thyroid increases definitely in size. This swelling occurs in the matter of a few hours or a day and is associated with marked local tenderness and at times with symptoms of choking and pressure in the neck. The tumor, following hemorrhage, tends to subside slowly over a period of days or a few weeks. Such a history differentiates at once the firm, hard swelling which is present on examination in these cases as due to a recent hemorrhage and not to malignant degeneration. Malignant degeneration of an adenoma, though it may be rapid, is never a condition developing within a matter of hours or one or two days.

Sarcoma

Almost every conceivable type of sarcoma of the thyroid has been described, including the fibro-, chondro-, osteo-, lympho-, hemangio-sarcomata, and also the round, spindle and mixed cell variety. Metastatic sarcoma involving the thyroid gland has occurred, but it is very rare.

Grossly, thyroid sarcomata are usually unilateral or median tumors; rarely do they produce a diffuse involvement of the gland. The rapidity of growth of these lesions is extremely variable, depending upon their degree of malignancy. The more differentiated types, such as the fibrosarcomata, are of slow growth, while the more embryonic types, especially the round-cell variety, enlarge rapidly, metastasize early and widely, and death commonly takes place relatively soon after the onset of symptoms. Hemorrhages and necrosis are common in the latter type of case, and in some cases of this nature enlargement has been so rapid that the condition has simulated a phlegmon of the neck.

As the malignant tumor grows it invades adjacent tissues, the veins of the neck, the trachea, larynx, muscles, arteries, nerves and skin. The original contour of the gland soon becomes completely destroyed from extension of the growth. Symptoms of compression of the esophagus, of the trachea, and especially of the recurrent laryngeal nerve, early giving rise to hoarseness, are common. Death commonly occurs from respiratory difficulty due to edema and compression of the glottis.

Metastasis may be late, but usually it is early. The route by which it occurs is primarily through the blood stream, less frequently by way of the lym-

phatics. Invasion of the thyroid veins within the goiter itself has been described along with the release of emboli directly into these veins, metastatic growths reaching primarily the lungs, and secondarily the skeletal system, liver, kidneys, and intestines. Frequently it is the case that metastasis dominates the picture while the primary focus remains relatively latent. Pulmonary metastasis often leads to erosion and perforation of blood vessels resulting in hemorrhages, pleural effusions, and so forth. These conditions may be confused with tuberculosis.

Sarcoma of the thyroid may occur in young individuals the same as it does in other locations of the body. According to most investigators, sarcoma, and likewise carcinoma, arises in about 90 per cent of cases in a pre-existing nodular goiter, usually in an individual in the fifth and sixth decades. As long as the growth remains inside the capsule no symptoms are produced, so the exact time at which the malignancy begins cannot be determined. Pre-malignant conditions likewise are difficult in evaluation since they may exist for a long period and the exact time of their metamorphosis into malignant lesions cannot be determined. The goitrous enlargement is the only symptom of which the patient is aware.

Thyroid malignancy is suspected, then, because of a firm, hard discrete type of tumor in the thyroid gland, because of recent growth, either slow or rapid, and because of secondary evidences of pressure such as difficulty in swallowing and breathing, and hoarseness. Thyroid malignancy soon leaves the normal contour of the thyroid gland to grow in an irregular and unrestrained manner and to become adherent to adjacent structures. In a few cases, the presence of large lymph nodes near the goiter is suggestive of the presence of malignancy. In rare cases bone metastases may be the first indication of the presence of malignancy in an apparently benign adenoma.

Treatment

In many instances operations are undertaken for a supposedly benign adenomatous goiter only to find that by immediate microscopic examination or by recurrence of the lesion at a later date, that neoplastic change had already taken place. Needless to say it is in these cases that are not diagnosed clinically that the best results may be expected. This fact, however, is dependent upon the pathologist making a thorough search and reporting the presence of malignancy at the time of operation. Extension of the growth through the thyroid capsule, as evidenced by fixation of the gland, lymph node involvement or metastasis, usually precludes the possibility of cure of resection of the mass. When metastasis occurs, the incidence is in the following order: chest, bones, pelvis, clavicle, sternum, ribs, skull, knee, spine and abdomen.

In the prophylactic removal of adenomata of the thyroid gland lies the greatest hope of cure of malignant lesions, since about 90 per cent of all these neoplasms occur in pre-existing nodules. After malignancy has been diagnosed, the treatment of choice is radical resection, and if this is impossible irradiation

alone or combined with surgical removal is strongly indicated.

In early cases in which the carcinoma is confined within the capsule, removal of all of the growth without rupture of the capsule is sufficient. If there is no definite encapsulation, total removal of the affected lobe must be done. In still later cases, even though the growth is fixed, complete extirpation with subsequent irradiation should be done. At exploration, if the growth is found to be inoperable, radium needles may be buried in the tumor. These are attached to silk threads so that the surgical wound may be closed and the needles removed aseptically after the specified time has elapsed. In addition, a large rubber drainage tube should be left in the wound so that radium on a lead stem may be inserted into the depths during convalescence. In inoperable cases, supplementary treatment is usually necessary, consisting of checker-boarding the region of the thyroid gland and applying radium in a mild erythema dose. High voltage roentgen ray treatment may also be used as a supplementary measure. By this method of treatment Pemberton and Fricke have effected a goodly percentage of cures.

Summary

In summary, it may be stated that surgery alone in this condition is usually not justifiable, even if the malignant lesion is entirely removed, although in many instances radical resection has proved to be a satisfactory procedure. The latter is especially true of the papillary adenocarcinomata which grow slowly, and tend to remain encapsulated for a long time. In the more malignant types, radiotherapy certainly offers additional protection against the extension of the disease. Tracheotomy is frequently necessary, especially in the later stages of the disease, as a palliative measure.

The prognosis of carcinoma of the thyroid has been shown by Pemberton and Fricke and others to be as good as that of similar lesions of any other organ with the exception of the lip and the skin. Of 323 cases treated by them with a combination of surgery and irradiation, five-year cures were effected in 43.9 per cent. Twenty per cent of these individuals lived ten years.

Discussion

Dr. Charles R. Drake (by invitation): This subject is perhaps best discussed from the standpoint of: (1) occurrence and pathology; and (2) treatment.

1. Thyroid malignancy is not of frequent occurrence. In various clinics and statistics the figures of occurrence vary from .5 to 2 per cent of all thyroid diseases considered. In the past twelve years at the Swedish Hospital (although the record is somewhat incomplete) out of 1,980 surgical and medical cases treated, at least ten malignancies were definitely found, either clinically or microscopically. I presume that all thyroids with definite nodules are potential malignancies, but all nodules are of necessity not sectioned because many thyroids have a large number of nodules or areas that

might show malignancy but are overlooked in sectioning.

The pathology of malignancy of the thyroid is to say the least rather obscure. The microscopic picture is often not clear at all and is the subject of considerable controversy; especially is this true of the exact differential diagnosis between sarcoma and carcinoma. Ewing says: "Notwithstanding the wide acceptance of numerous reported cases of sarcoma of the thyroid, there is a strong reason for believing that the great majority of these tumors are of epithelial origin. It is clear that the diagnosis of sarcoma has usually been accepted on the most superficial resemblance to a meso-epithelial tumor, and without any effort to critically interpret the structure and origin. Hence many authors have recognized the uncertain standing of thyroid sarcoma, but dismissed the matter by stating that there is no sharp dividing line between carcinoma and sarcoma. The close resemblance of the general etiology, clinical course, and gross anatomy of the two conditions fully bears out this conclusion. There remain only histological distinctions, but when these are examined in detail they fail to establish the frequent occurrence of malignant mesoblastic tumors of the thyroid."

However, the sarcomas, if they are so diagnosed, are very rare. As such they would participate in the various classifications of sarcoma, such as fibro, spindle, and round cell sarcomas. The real difficulty here lies in the difficulty of the differentiation between the epithelial elements and the connective tissue elements. I should prefer to speak of them all as malignant tumors rather than with specific differentiations. The same difficulty occasionally occurs in other locations of the body, especially such as sarcomas or carcinomas of the ovaries or testicles. Apparently those parts of our bodies which possess the more nearly embryonal types of cells give us the most difficulties in diagnosis.

Malignancies of the thyroid usually occur in those who have a goiter history, especially of the adenoma type. The adeno-carcinomas are usually lobular, with soft peripheries and hardened centers. They are very vascular. The rate of growth is usually slow, but progressive. The type of cell structure is either cubical or cylindrical and may be diffuse or alveolar. Papillary forms are a sub group of the adeno-carcinoma type. The capsule is at first intact but later infiltrated. Transition from adult type cells to embryonal types are frequent. Separation between adeno-carcinoma and other forms of carcinoma is very imperfect. The carcinoma may be alveolar, scirrhous, or massive cell type resembling sarcoma—"carcinoma-sarcoma." Absence of colloid is an important differential point. All are very vascular. There is also the question of metastases of benign thyroid tissue or whether these areas are embryonic rests of thyroid tissue.

The histogenesis of these tumors is both embryonal and adult in character. The squamous cell type comes from the thyroglossal duct.

The carcinomas, so-called, being of the epithelial type, when clearly defined, take on the form of: (1) scirrhous; (2) papillary; and (3) adeno-carcinoma of malignant adenoma. The papillary type is grouped under

adeno-carcinoma. The point of differentiation between the malignant adenoma, adeno-carcinoma and carcinoma is also very difficult at times and the question arises as to whether in some of these tumors one is dealing with a malignancy at all. Like all malignancies, these tumors may be slow or rapid in growth, hard or soft inconsistency, remaining local or rapidly metastasizing in character. Metastases occur most frequently in the following locations in the following order: lungs, bones, liver, kidney, pleura, brain, regional glands. Bone involvement by metastases occurs most frequently in the following order: skull, sternum, spine, ribs, humerus, femur, and pelvis. Those metastases which occur in the lungs and bones, of course, are the most frequent and most readily diagnosed by the x-ray. The difficulties of microscopic diagnosis are well demonstrated by the microscopic slides which Dr. Nordland has shown you.

The question of metastases, I believe, is the most important of all considerations in the treatment of malignant cases. When a malignancy remains local a cure can almost always be obtained provided the malignancy is not associated with or primary in a vital organ. In these cases surgery, cautery, radium and x-ray become efficient agents in the destruction of the malignant process. However, when the malignancy is located in inaccessible localities the treatment becomes of no avail or at best palliative with radiation the method of choice. Care must be exercised in radiation therapy because I sometimes think that excessive radiation therapy is dangerous to the metabolic processes of normal structures, and often patients succumb to toxic products, either of the malignancy or of the radiation. Be that as it may, the question of metastases is of the utmost importance. Experience has told me that metastases may occur *early* or *late* in most varieties of malignancies. Usually the early metastases are not discernible, hence one general principle of treatment is axiomatic—all malignancies should be treated *fully* by the best accepted methods or combination of methods with the expectation of a cure, because when we least expect a cure we sometimes obtain one.

2. *Treatment*.—All thyroids with nodules should be removed surgically, at which time microscopic diagnosis should be made. Potential malignancies may be found in all nodular thyroids, hence surgical removal is prophylactic as well as diagnostic. If a diagnosis of malignancy is made, post-operative radiation, either by x-ray or by radium pack, should be carried out. In clinically inoperative cases, radiation should be instituted locally by the use of radium packs, radium implants and x-ray, and if metastatic, by x-ray. It is not my purpose to give technic of radiation therapy, but to give emphasis to intensive and sufficient treatment. These tumors are considered quite radio-sensitive. Craver of the Memorial Hospital in New York reported of thirty-three cases so treated, nineteen died, four not traced, and ten living, with three showing marked improvement, at the end of several years. Other clinics give similar reports. If a clinical diagnosis can be made, operative procedure should not be undertaken unless the tumor is circumscribed and movable. If no surgical treatment is indicated, intensive radiation by radium and

x-ray should be instituted. Those that are far advanced with complications to the larynx, and with metastases to the lungs are practically hopeless.

At the Swedish Hospital one patient of Dr. Nordin's is well after three years following treatment by x-ray alone. Others treated by x-ray regressed, but later died of metastases. I recall one severe case of a patient treated by radium packs, who obtained relief and recession for a period, only to die later of recurrence.

I wish to report at this time a case that seems remarkable in many ways, first because of the undoubted malignancy, second, because of the lack of metastases, and third, the method of treatment by radium alone. This was the case of a woman, aged forty-five, referred to me in July, 1922. There had been a history of enlarged thyroid for some time in this case. While seeing another member of the family professionally, the physician in charge had his attention called to this patient with a large nodule in the thyroid region which resembled an abscess nearly ready to open. The patient was sent to a hospital where the lesion was opened but a severe hemorrhage occurred because of the vascularity of the region. The hemorrhage was controlled. The patient went home and later left the state. This was in January, 1922. The condition never healed and a large discharging sinus developed. At one time a very severe hemorrhage occurred after this while she was out of the state. She later returned and I saw her first about July 5, 1922. At that time in the hospital we curetted out of the sinus some small masses of soft mushy material for microscopic diagnosis. The sections showed "entire structure to be made up of glandlike acini resembling thyroid growth without colloid material. Occasional mitotic figures are found. Entire structure is made up of this material. There is some inflammatory reaction in certain portions. Diagnosis: Adenocarcinoma.

The case looked like a hopeless one. The patient was in a very poor condition generally. However, the local lesion was treated by the insertion of radium needles on July 11, six in number, for eight hours (600 mgh.). Again on July 20 four needles were used, four and one-half hours, and a radium pack of 100 mgh. was applied over the entire area of the thyroid, 2,100 mgh. On August 20 a second pack treatment of 2,000 mgh. was given. On September 29, a third pack of 1,200 mgh. was given. On January 8, 1923, a fourth pack treatment of 1,000 mgh. was given. A note on the chart made at this time (1-8-23) says: "Very marked improvement and tumor almost gone. Sinus healed." A note on the chart made March 3, 1923, says: "Small gland-like nodules." A treatment was given with radium pack on this date. No further treatment was given. This woman is still living and well after thirteen years.

In conclusion I would make these observations:

1. There is considerable difficulty of absolute diagnosis, both clinically and microscopically, of thyroid malignancy.

2. Surgical removal of all thyroids with nodules is recommended, especially if there is a tendency to continued growth.

3. Thorough radiation should be carried out, either by x-ray, radium, or both, when a diagnosis is made clinically or microscopically.

4. The continued treatment by radiation results in a fair number of cures—depending largely upon the element of metastases or upon the microscopic picture.

MALIGNANT TUMORS OF THE URINARY TRACT

Theodore H. Sweetser, M.D.

Although there has been a gradual improvement in the result of treatment of cancer of the urinary tract during the past twenty or thirty years, we still find that many, perhaps a large majority, of such cancers are incurable when the diagnosis is finally made. Pleas for earlier diagnosis are still needed. To some extent the delay is unavoidable because the cancer at first may be symptomless. Some of the delay may be charged to the patient because he may disregard a painless hematuria or may take patent medicine for an unexplained bladder irritability. But some of the delay may be charged to the physician who treats a patient with hematuria, bladder irritability or kidney pain without a proper explanation of the cause of the trouble.

Hematuria always demands an adequate explanation, and a complete explanation nearly always necessitates a complete urologic examination. Hematuria does not always come from a new growth; it has many possible causes, including a few, such as acute gonorrheal urethritis, in which cystoscopy is contraindicated. But the three most common causes—stone, tuberculosis, and tumor—all demand thorough investigation and treatment. An unstudied hematuria due to cancer may cease with rest in bed, and the cancer may be incurable when bleeding next occurs.

Barringer,¹ in reporting cases of bladder tumor, says, that "in most patients there was a lapse of over a year before they sought hospital treatment. The large majority of these cases had sought medical advice much earlier in their disease." One patient under my care at this time had intermittent hematuria for over a year before he consulted a physician complaining of frequent difficult urination, loss of weight, and anemia; he had a large papillary carcinoma of the bladder (Figs. 3 and 4). Another patient, in whom we found an adenocarcinoma of the kidney, had consulted several physicians for hematuria and lumbar pain during the preceding three years. They had given various medicines and treatments without any adequate attempt at diagnosis. On the other hand, in still another patient, I found blood coming from the right ureter but found no abnormality in pyelograms or ureterograms; as we were considering exploration of his right kidney, some days later, he had a sudden pain in the left loin and cystoscopy demonstrated bloody urine coming from the left kidney only. The patient had no operation but ceased bleeding after administration of ovarian substance and is still living, with no sign of tumor after several years.

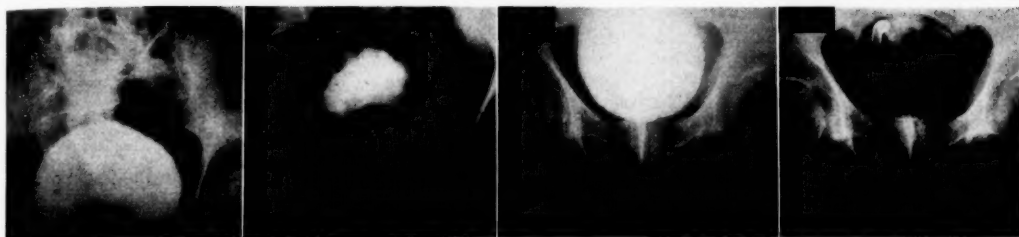


Fig. 1

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Fig. 3

Fig. 4

Fig. 1. Cystogram in a case of benign prostatic hypertrophy. Note the smooth filling defect without distortion of the bladder wall.

Fig. 2. Extensive carcinoma of the bladder involving the bladder outlet, trigone and left wall. Note the irregularity of the filling defect and the distortion of the bladder wall. Also on the left side note, indistinctly, a large diverticulum, the outlet of which was practically closed by tumor tissue.

Fig. 3. Cystogram with skiodan in a patient with a very large papillary carcinoma of the bladder nearly filling the bladder. The narrow margin of increased density at the periphery on the right side is about the only place where the tumor does not reach the bladder wall.

Fig. 4. Cystogram in the same case after drainage of the skiodan and injection of air. The coating of skiodan on the surface of the tumor can be seen at its margins with a zone of air-filled bladder beyond; the curve of the catheter in the bladder is an added indication of the size of the tumor. This tumor is attached to the bladder wall in an area comprising the trigone, neighboring parts of the left bladder wall and the bladder outlet.

We will accomplish much if we will be able to make the profession and the public realize that hematuria demands adequate explanation, even though that may require a complete urologic examination. Such a complete urologic examination should include a search of the urethra, bladder, ureters, and kidneys, by urethroscopy, cystoscopy, cystography in many cases, ureteral catheterization, renal function tests, cytologic and cultural examination of the urines from the kidneys, ureterography and pyelography. There are many causes of hematuria and sometimes two causes in one patient. One occasionally hears of bleeding from an enlarged prostate concomitant with bleeding from a tumor of the bladder or kidney. I shall never forget one case in which I found prostatic bleeding but failed to find a papilloma in the lower third of the right ureter which was not bleeding at the time and was not visible at the ureteral meatus.

Diagnosis of carcinoma of the urethra is accomplished by inspection, palpation, and urethroscopy. Such growths are very rare in the male and only occasionally seen in the female. Carcinoma of the bladder is usually diagnosed by cystoscopy. Rectal palpation and cystogram with skiodan and with air may help in determining the size of the growth and the degree of infiltration into or through the bladder wall (Figs. 1, 2, 3, 4). Carcinomata of the ureter and of the renal pelvis are difficult of diagnosis, sometimes impossible. Carcinoma of the ureter is suspected when blood comes from one ureter, the pyelogram being normal and the ureterogram deformed; one may occasionally see the growth or its implants at the ureteral orifice. Sometimes the ureteral growth is an implant from a papillary carcinoma of the renal pelvis. Of carcinoma of the renal pelvis, the papillary type is most common. Any papilloma of the renal pelvis, as of the bladder, is potentially malignant and should be treated as such. It, typically, as in the bladder, gives rise to implants which may be scattered down the ureter and even onto the bladder mu-

cosa. A filling defect may be discovered in the pyelogram. It must be remembered, however, that blood clots and non-opaque renal calculi sometimes cause confusion. Pyelography is our most important single aid in the diagnosis of tumors of the renal cortex. I will show some pyelograms but must add that the interpretation of pyelograms is much too large a subject for detailed discussion on this occasion.* A tumor causing a palpably enlarged kidney mass is quite apt to be found to be inoperable. The patient with a renal cancer is indeed fortunate if his trouble can be accidentally discovered before the onset of any symptoms. We discovered one such tumor during an operation for drainage of a perinephritic abscess. It should be noted that the preliminary study before treatment of any cancer of the kidney or bladder should include roentgenographic search of the lungs, pelvis and long bones for possible metastases.

As to treatment of cancer of the urinary tract there is no universal acceptance of any standard methods.

I believe that all kidney tumors without demonstrable metastases should be explored. Preoperative roentgen or radium therapy for large hypernephromata and for renal tumors of childhood (Wilms' tumors) is highly recommended by some and condemned by others with good reasons on both sides. I prefer immediate exploration. I feel that an incision should be used which will allow clamping of the vascular pedicle before manipulation of the kidney, especially in hypernephromata which are apt to extend into the renal vein. Some advise opening the peritoneum which may be wise in cases of the childhood tumor. However, a good exposure can be obtained by an incision of the type described by Hugh Cabot,⁴ in 1925, extending obliquely from the lumbar region to the midline in front near the navel and thence upward in the midline as far as neces-

*For previous discussion and illustrative pyelograms by the author, see "Pitfalls in the Diagnosis of Renal Tumors," MINNESOTA MEDICINE, 16:235, (April) 1933.

sary, the unopened peritoneum and colon being reflected medially. Large hypernephromata and Wilms' tumors may or may not receive great benefit from post-operative irradiation. Some advise reliance upon irradiation alone in the Wilms' tumors. On the other hand, Beer² recently reported a patient who was well nineteen years after operative removal of a Wilms' tumor, and Wood and Shore⁶ have noted a patient who was well seven years after removal of a large hypernephroma. Irradiation is not mentioned in either report. We have followed one patient who has been well for nearly six years now, after nephrectomy for hypernephroma. Isolated cures are being reported frequently enough to show that such cases are not always as hopeless as they at first seem to be. Adenocarcinoma of the kidney should be treated by nephrectomy with removal of as much perirenal fat as possible; the prognosis is not good; implantation of radium into surrounding tissues has been suggested but is beyond my experience.

Papillary carcinoma of the renal pelvis and of the ureter should be treated by nephrectomy and complete ureterectomy with removal of the ureteral orifice and surrounding bladder wall; periodic cystoscopy should be carried out later with fulguration of any implants that might develop in the bladder mucosa. Radiation is probably unnecessary for most operable papillary cancers of renal pelvis or ureter, but may be a useful adjunct in treating infiltrating growths, especially the relatively rare squamous cell carcinoma of the renal pelvis.

Carcinoma of the urethra is quite rare and I have seen none. However, Taussig⁸ has recently reported four out of fourteen cases living and well beyond five years, three of them treated by excision or radiation with removal of the regional lymph nodes.

There is no agreement regarding the treatment of carcinoma of the bladder. Some treat nearly all by radium alone, some by electrocoagulation alone, some, where possible, by surgical removal, some by cautery and some, in selected cases, by total cystectomy. Most surgeons use combinations of methods or vary the method according to the type of case. There will be disagreement with my remarks no matter what I say. Carcinomas of the bladder vary in size, in type, in grade of malignancy, and in location, and all of these factors have a bearing on the treatment. The age and general condition of the patient and the condition of his kidneys should also influence the treatment.

First, the situation should be surveyed by cystoscopy, cystography, renal function tests, and biopsy, and by x-rays of bones and lungs. If the renal function is poor, one may do preliminary nephrostomy as advised in 1932 by Boyd,³ rather than to attempt implantation of ureters into the bowel. Then the growth itself should be destroyed completely at once if possible. Our failures come from incompleteness of initial treatment, whether because the growths are beyond treatment when they come or because we are too conservative in the initial treatment. We should consider all bladder growths as at least potentially malignant. We may cure small papillomas by cystoscopic fulguration but we should be very sure to completely destroy the base at

the initial treatment. We should repeatedly observe these cases cystoscopically for years to destroy implants and recurrences, remembering that recurrences are liable to be more and more malignant and infiltrative. When in doubt as to the adequacy of cystoscopic fulguration we should open the bladder suprapubically and destroy the growth by excision or resection if in the vault or by cautery or cutting current, combined with electrocoagulation or low heat cooking with cautery if in the base, trigone, or vesical outlet. Radium does not appeal to me as being any more effective than low heat cautery or coagulation, and is known to give very distressing pain when placed in the vesical outlet, and to give large sloughs in some cases. Electrocoagulation seems to have superseded the cautery in many clinics. I have used it successfully but I would like to mention in favor of the latter, that, after cautery removal, the low heat cautery can be applied and the degree of penetration fairly well controlled (with, perhaps, a finger in the rectum) whereas in bipolar electrocoagulation various authors have noted irregular and excessive penetration of the lethal effect, resulting in pericystitis. This has also been seen in radium treatment. I have one patient who is well six years after such a cautery treatment of a squamous cell carcinoma of Grade III malignancy located near the left ureteral orifice, and measuring 2.5 cm. in diameter with a pedicle over 1 cm. in diameter and with distinct infiltration beyond the pedicle. An area of bladder wall over 3 cm. in diameter was thoroughly cooked. That patient has had some fourteen cystoscopies in the six intervening years, with slight signs of trouble only once, within four months after operation. Counseller has remarked that in some cases implants and extensions occur no matter what the form of treatment. I treated one patient with a small growth by fulguration and radium over a period of almost two years with very encouraging results apparently—occasional implants but no signs of infiltration. Then I noted slight signs of irregularity at the original growth and operated suprapubically, to find an infiltrating growth. It finally involved the ureter and led to death from renal infection, as happens in so many cases of bladder cancer. On the other hand I have, on at least two or three occasions, been surprised at the remarkably good, though probably not permanent, relief in very large and malignant growths of the bladder base and vesical outlet by use of surgical diathermy and electrocoagulation. Total cystectomy theoretically should be an ideal treatment. The bladder is not an essential organ, and metastasis does not often occur early from cancer of the bladder. However, transplantation of the ureters to the bowel is not yet a safe procedure in such cases nor are its late results yet proved to be uniformly good. The cystectomy itself is said to be none too simple in some cancer cases. Permanent lumbar nephrostomy or ureterostomy is often not acceptable to the patients. So, in practice, we depend on fulguration and electrocoagulation through the cystoscope or suprapubically; radium or its emanations through the cystoscope or suprapubically; resection or excision if the growth be favorably situated;

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

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(To be concluded in July issue)

THIRTIETH ANNIVERSARY OF THE COUNCIL ON PHARMACY AND CHEMISTRY

On February 11 the Council on Pharmacy and Chemistry completed its thirtieth year of service to the medical profession. For nearly a third of a century it has made contributions of inestimable value to rational therapeutics. Of the personnel of the Council, which serve entirely without remuneration, four members have been active ever since its organization in 1905. A comparison of the conditions prevailing in the marketing of drugs in this country before 1905 and those obtaining today indicates the debt that American medicine owes to the Council on Pharmacy and Chemistry. The rules governing the acceptance or rejection of remedies adopted in the beginning have gradually been amplified and clarified to meet new conditions. Advertising claims employed by manufacturers of pharmaceuticals for products accepted by the Council have attained standards of accuracy and truthfulness unequalled in any other field of marketing. The *Journal A. M. A.* and many other medical publications in this country, including the journals of all the state associations with the exception of Illinois, accept advertising for Council-accepted or official drugs only. But the Council's work would have come to naught had it not been for the militant aid of the *Journal A. M. A.* and the ever increasing support of the medical profession. Among the important contributions of the Council have been the evaluation of new drugs on the basis of available evidence, the publication of reports giving the results of this evaluation, the standardization with the assistance of the A. M. A. Chemical Laboratory of products that show promise of therapeutic usefulness, and the publication of special articles in review of subjects of current interest to the medical profession. In addition the Council issues several books: *New and Nonofficial Remedies* (revised yearly), *Useful Drugs*, the *Epitome of the U. S. Pharmacopeia and National Formulary*, and (in coöperation with the Council on Medical Education and Hospitals) *Hospital Practice for Interns*. It continues its important tasks, ever increasing in number and volume, unselfishly and with intelligence and foresight. It merits unflinching support by the medical profession.—*Journal A. M. A.*, February 9, 1935, p. 478.

ELECTROTHERAPY AND LIGHT THERAPY. Richard Kovacs, M.D., Clinical Professor and Director of Physical Therapy, Polyclinic Medical School and Hospital, New York, etc. 696 pages. Illus. Price, cloth, \$7.50. Philadelphia: Lea & Febiger, 1935.

A SUMMARY OF THE TREATMENT OF FRACTURES AND DISLOCATIONS. R. Broomhead, F.R.C.S., Surgeon, Orthopedic Department, General Infirmary at Leeds. 30 pages. Price 3/6d. Leeds (Eng.). Jowett & Sowry, Ltd., 1934.

For the physician who does only moderate amounts of fracture work, this booklet supplies a wealth of material which is quickly available and an amount of information which is remarkably extensive for the size of the pamphlet. It is likewise very accurate and compact, and although no great details of management in the way of methods of reduction or after-care of fractures are contained, yet such cannot be expected, since that is the purpose of a textbook.

Besides the actual management of fractures alone, Part I contains matters of a general nature such as an up-to-date outline on bone diseases, complications of fractures, methods of union, causes of non-union and indications for open reduction, and general principles of the treatment of compound fractures.

As a quick reference on the treatment of fractures, the booklet can be heartily recommended as a source of much information.

LAWRENCE M. LARSON.

DISEASES OF THE SKIN. Richard L. Sutton, M.D., Sc.D., LL.D., F.R.S., Professor of Dermatology, University of Kansas, and Richard L. Sutton, Jr., A.M., M.D., F.R.C.P. 9th Ed., 1433 pages. Illus. Price \$12.50. St. Louis: C. V. Mosby Co., 1935.

Sutton's volume on dermatology which first appeared in 1916, has been accepted as one of the best standard texts on the subject. The recent ninth edition which was compiled by Richard L. Sutton, Sr., with the aid of his son, Richard, Jr., is of the same high quality as previous editions and is brought up to date by the inclusion of considerations of many new conditions. Hidrosadenitis axillaris, hemolytic streptococcal gangrene, necrobiosis lipoidica diabetorum, erythroplasia of Queyrat, subepidermal fibrosis, cutaneous amloidosis and ganglioneuroma are but a few of the disorders discussed for the first time in this edition. The sections on coccidioidal granuloma, tularemia and the treatment of syphilis have been revised.

The present edition is a large volume of 1433 pages

BOOK REVIEWS

and is especially valuable on account of the abundance and excellence of the photographs. It should prove to be an admirable volume not only for teaching purposes to the student, but for the practitioner as well.

CARL W. LAYMON, M.D.

CLINICAL MANAGEMENT OF SYPHILIS. Alvin R. Harnes, M.D. 71 pages. Illus. Price \$1.50. New York: Macmillan Co., 1935.

This little booklet of 71 pages attempts to cover in a way the treatment of syphilis. The reading matter is, of course, very limited and the information of value is given in the form of charts that outline the treatment of the various phases of the disease. The author is very insistent upon treating the patient for at least one year after the Wassermann findings are negative.

He takes up the handling of primary syphilis with a negative serology, primary and secondary syphilis with a positive serology, visceral syphilis, cardiovascular syphilis, central nervous system syphilis, syphilis and pregnancy, congenital syphilis. He is up to date in his ideas and any one that wishes to treat this disease, and has forgotten what to do, can brush up on the latest information on the subject.

The treatment of congenital syphilis takes up the use of acetarsone, or, as he calls the drug, stovarsol. He gives a different dosage than we use at the Minneapolis General Hospital, but as far as that goes almost every one has his own dosage for this drug. I note that he recommends the use of bismuth and mercury along with the stovarsol. We use it alone and have very good results.

All in all, this is a good little book.

S. E. SWEITZER.

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